

1FW AF



IN THE UNITED STATES PATENT & TRADEMARK OFFICE  
BOARD OF PATENT APPEALS & INTERFERENCES

In re the Application of: Majid Syed	)Conf. No.: 9765
	)
Serial No.: 10/044,195	)Group Art Unit: 2155
	)
Filed: Oct. 26, 2001	)Examiner: Nguyen, Thuong
	)
For: ARBITRATOR SYSTEM AND	)
METHOD FOR NATIONAL AND	)
LOCAL CONTENT DISTRIBUTION	)
	)
	)

**Mail Stop Appeal Brief - Patents**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPELLANT'S SUBSTITUTE APPEAL BRIEF**

Sir:

This Substitute Appeal Brief is filed in response to the Notification of Non-Compliant Appeal Brief mailed April 9, 2008. The Substitute Appeal Brief is also filed in response to the Final Office Action mailed April 23, 2007 and in response to the Pre-Appeal Panel Decision mailed November 30, 2007.

**I. Real Party in Interest**

The real party in interest is iBiquity Digital Corporation, Warren, New Jersey, as evidenced by an Assignment recorded at Reel/Frame 012494/0058.

**II. Related Appeals and Interferences**

There are no related appeals or interferences to the instant application.

**III. Status of Claims**

Claims 1-39 are pending in the above-referenced application. Claims 1-39 have been finally rejected. Claims 1, 19, 37, 38, and 39 are independent claims. Claims 2-18 depend from claim 1, and claims 20-36 depend from claim 19. The rejections of claims 1-39 are now appealed.

**IV. Status of Amendments**

No amendments have been filed subsequent to the final rejection.

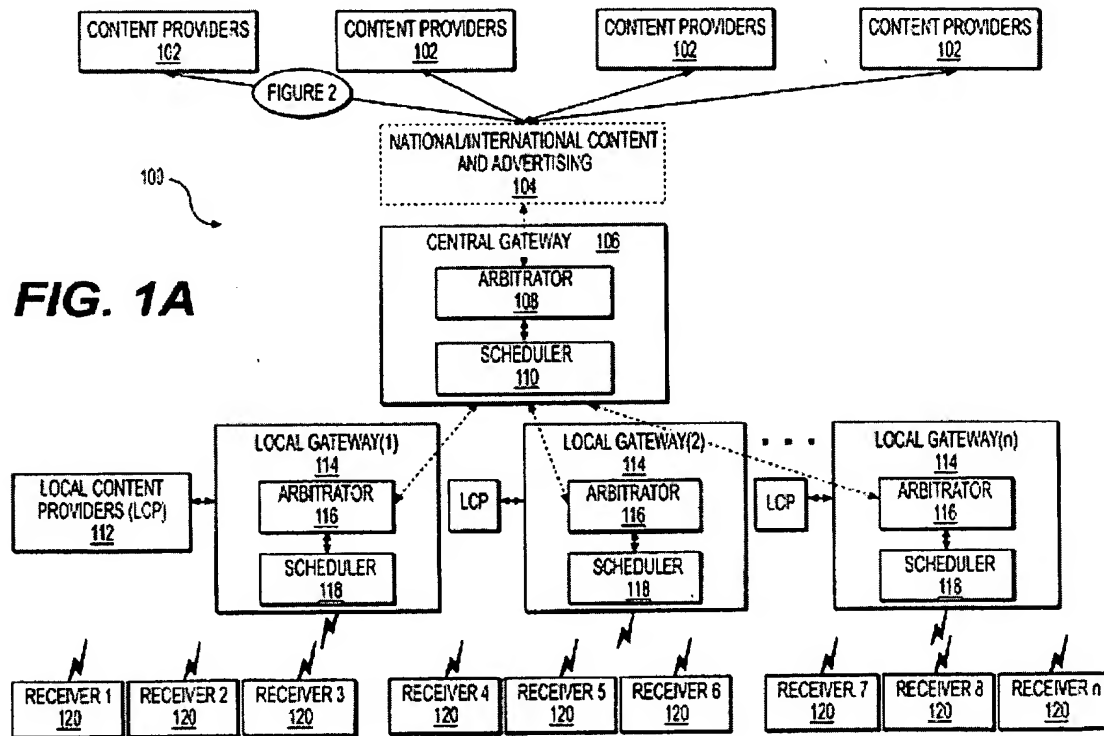
**V. Summary of Claimed Subject Matter**

The claimed subject matter of independent claims 1, 19, 37, 38, and 39 relates to a system and method for scheduling national and local broadcast digital radio content and advertising using a sophisticated communication protocol through multilevel arbitration.

**A. Independent Claim 1**

Independent claim 1 is directed to an intelligent digital broadcast scheduling system, such as system 100 shown in FIG. 1A of the present application, the broadcast scheduling system arbitrating the use of specified broadcast time slots. The broadcast comprises data

content that includes one or more of audio, video, text, graphics, images, or data. Application, p. 6, lines 18-20. An exemplary digital radio broadcast system is the in-band-on-channel (IBOC) system, which allows radio stations to deploy digital transmission technology within existing bandwidths allocated to conventional AM and FM stations. Application, p. 5, lines 7-9.



As shown in the example of FIG. 1A, the scheduling system 100 includes an arbitrator, *e.g.*, arbitrator 108 and/or 116, that determines relative levels of data content based upon priority indicators, service categories, and service classes of data content received from a plurality of content providers. Application, p. 6, lines 11-14; p. 9, lines 7-10; p. 11, lines 9-11; p. 12, line 12 to p. 13, line 6; and p. 23, line 20 to p. 24, line 6. With reference to the exemplary digital broadcast scheduling system of FIG. 1A, national/international content providers 102 (*e.g.*, providers of digital radio collections, radio stations, Internet providers, advertisers, and emergency broadcasting content providers) can download data content and access requests to a central gateway 106. Application, p. 9, lines 4-7. As illustrated in FIG.

1A, the arbitrator 108 may be, for example, a component of the central gateway 106.

Application, p. 9, lines 7-9. Arbitrators 116 may be components of local gateways 114.

Application, p. 10, line 20 through page 11, line 3. The priority indicators may describe the transmission priority of the content and can include, for example:

1. Extreme High Priority – This indicates that the transmitter should suspend current over-the-air (OTA) transmissions in order to transmit the content and may be useful in emergency alert situations.
2. High Priority – This indicates that the transmitter should transmit the content at the earliest opportunity.
3. Normal – This indicates that OTA transmission should occur according to the associated repetition rate for the content.
4. Background/Low – This indicates that the content can be transmitted in the slots left available after the Extreme High Priority, High Priority, and Normal Priority content has been scheduled. Application, p. 12, lines 14-21.

The service categories can include, for example: unknown/unspecified, administrative, maintenance, talent announcement, advertisement, news, sports, weather, traffic, emergency, alert, stocks, entertainment, restaurants, lodging, medical, health, hospitals, multimedia, audio, logo, and text. Application Figure 3. The service class can be a service grade that content providers request. Application, p. 13, lines 1-3. The service classes can include, for example, basic, preferred, premium, etc. In some embodiments, each service class may have a quality of service (QoS) assigned for the IBOC system. Application, p. 13, lines 1-3.

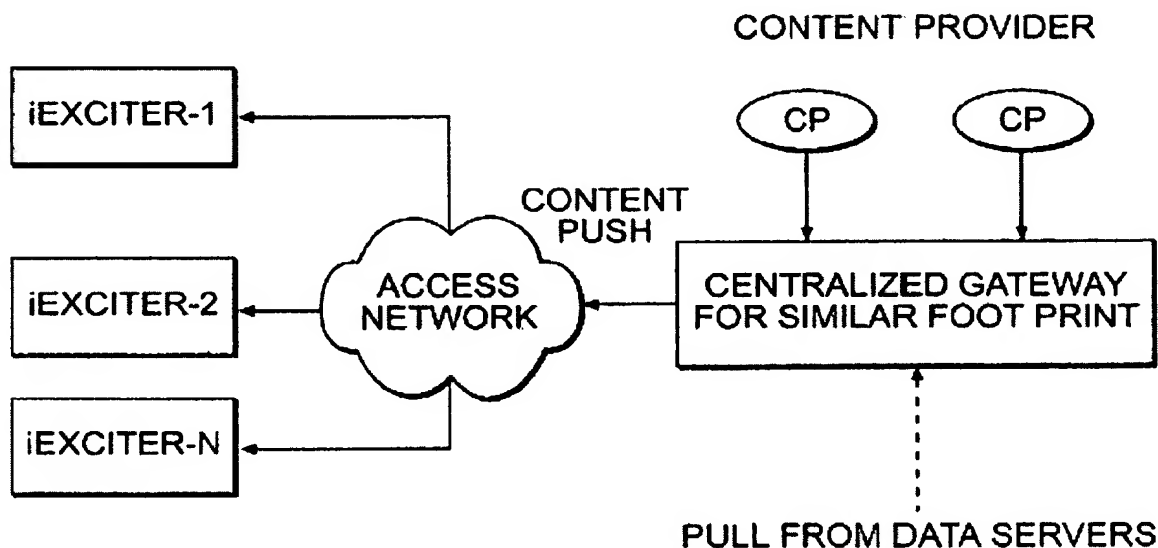
The scheduling system, *e.g.*, scheduling system 100 shown in FIG. 1A, also includes a scheduler, *e.g.*, scheduler 110 and/or schedulers 118, that sequences the data content for broadcast based on the arbitrator determinations of relative levels of data content.

Application, Figure 7; p. 6, lines 6-11; p. 11, lines 9-11; and p. 22, line 14 to p. 23 line 19.

As illustrated in the exemplary digital broadcast scheduling system 100 shown in FIG. 1A,

the scheduler 110 may be, for example, a component of the central gateway 106.

Application, p. 9, lines 7-9. As another example, scheduler(s) 118 may also be a component(s) of local gateway(s) 114.



**FIG. 1B**

The scheduling system, *e.g.*, scheduling system 100 shown in FIG. 1A, also includes an IBOC transmitter (*e.g.*, labeled as iExciter(s) in FIG. 1B) broadcasting the data content based upon the sequencing. Application, p. 7, lines 7-9; and p. 19, lines 7-9. As illustrated in the exemplary digital broadcast scheduling system shown in FIG. 1B, a centralized gateway (*e.g.*, labeled “CENTRALIZED GATEWAY” in FIG. 1B, and also referred to as a Push Pull Gateway or iPPG) can push content to IBOC transmitters that may be, for example, radio transmitter stations (also referred to as iExciters). Application, p. 19, lines 7-9.

#### **B. Independent Claim 19**

Independent claim 19 is directed to an intelligent digital broadcast scheduling system, *e.g.*, system 100 shown in FIG. 1A of the present application, the broadcast scheduling system arbitrating the use of specified broadcast time slots. Application, p. 6, lines 6-7. The broadcast comprises data content that includes one or more of audio, video, text, graphics,

images, or data. Application, p. 6, lines 18-20. An exemplary digital radio broadcast system is the in-band-on-channel (IBOC) system, which allows radio stations to deploy digital transmission technology within existing bandwidths allocated to conventional AM and FM stations. Application, p. 5, lines 7-9.

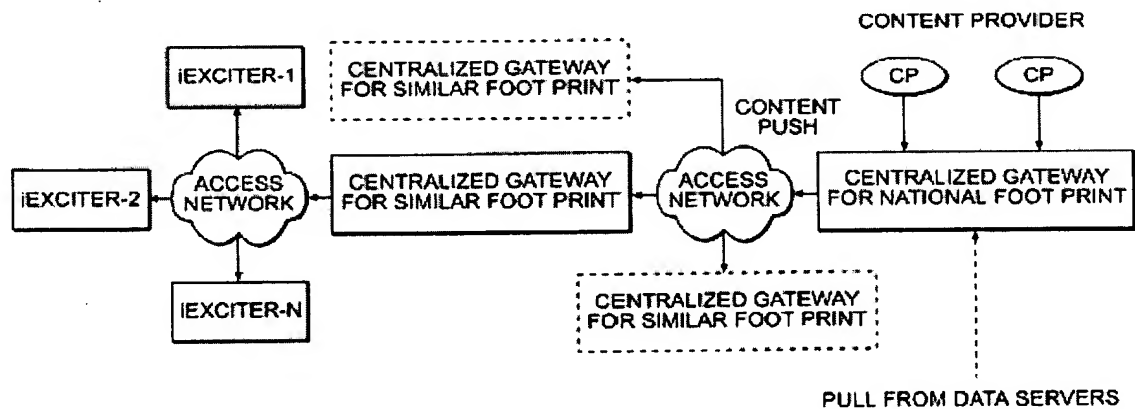
The scheduling system, *e.g.*, scheduling system 100 shown in FIG. 1A, includes one or more gateways, *e.g.*, central gateway 106 and/or one or more local gateways 114, which receive data content from a plurality of data content providers. According to one example, with reference to the exemplary digital broadcast scheduling system of FIG. 1A shown above, national/international content providers 102 (*e.g.*, providers of digital radio collections, radio stations, Internet providers, advertisers, and emergency broadcasting content providers) can download data content and requests for access to a national broadcast to the central gateway 106. Application, p. 9, lines 4-7. In this exemplary configuration, the central gateway 106 stores information regarding available bandwidth. Application, p. 9, lines 7-9. In addition, in this example, only a portion of the total broadcast bandwidth available is reserved for national/international content. Application, p. 9, lines 11-12. This portion is scheduled and passed to the local gateways 114 for local programming. Application, p. 9, lines 12-13. At the local gateways 114, local content providers 112 can request access to both content already allocated to the national/international content providers and to any remaining available time slots (*i.e.*, bandwidth). Application, p. 10, line 20 to p. 11, line 1.

In another example, operators that own multiple stations may have one centralized gateway, such as gateway 106. Application, p. 9, lines 16-17. When requests for broadcast access and data content is submitted, the centralized gateway 106 can determine bandwidth availability for the corresponding radio stations. Application, p. 9, lines 17-20. This exemplary configuration does not require local gateways, *e.g.*, local gateways 114, as it relies

on a centralized gateway 106 for access to the broadcasts of the various radio stations.

Application, p. 9, line 21 to p. 10, line 2.

In another example illustrated in FIG. 1B (shown above), operators that own single radio stations that cover similar areas as other local radio stations may use a centralized gateway, such as shown in FIG. 1B (labeled in FIG. 1B as "CENTRALIZED GATEWAY"). Application, p. 10, lines 2-3. In this exemplary configuration, the operators do not need to repeat common information such as weather, traffic, and advertisements but instead they can use the centralized gateway to schedule such content. Application, p. 10, lines 4-6. In such a configuration, the centralized gateway has all the functionality and local gateways 114 are not required. Application, p. 10, lines 7-8.



**FIG. 1C**

In yet another example illustrated in FIG. 1C, operators that own single radio stations and are geographically dispersed may create a network of gateways (labeled in FIG. 1C as "CENTRALIZED GATEWAY"). Application, p. 10, lines 9-11. The centralized gateways do not manage location specific content such as traffic and weather, but they do manage any information that requires a larger footprint such as news and advertisements. Application, p. 10, lines 11-13. In this exemplary configuration, a local gateway (not shown) is required to manage local content. Application, p. 10, lines 13-14.

The scheduling system, *e.g.*, scheduling system 100 shown in FIG. 1A, also includes an arbitrator, *e.g.*, arbitrator 108 and/or 116, that determines relative levels of data content based upon priority indicators, service categories, and service classes of data content received from a plurality of content providers. Application, p. 6, lines 11-14; p. 9, lines 7-10; p. 11, lines 9-11; p. 12, line 12 to p. 13, line 6; and p. 23, line 20 to p. 24, line 6. Depending on the gateway configuration as described above, the arbitrator, *e.g.*, arbitrator 108 and/or 116, may be a component of a centralized gateway 106 and/or local gateways 114. For example, as illustrated in FIG. 1A, the arbitrator 108 may be a component of the central gateway 106. Application, p. 9, lines 7-9. Also, for example, arbitrator(s) 116 may also be a component(s) of local gateway(s) 114. In some embodiments, the arbitrators 116 in the local gateways 114 may arbitrate the requests from the local content providers and the previously scheduled national/international content by determining relative levels of data content based upon priority indicators, service categories, and service classes. Application, p. 11, lines 1-2. The priority indicators may describe the transmission priority of the content and can include, for example:

1. Extreme High Priority – This indicates that the transmitter should suspend current over-the-air (OTA) transmissions in order to transmit the content and may be useful in emergency alert situations.
2. High Priority – This indicates that the transmitter should transmit the content at the earliest opportunity.
3. Normal – This indicates that OTA transmission should occur according to the associated repetition rate for the content.
4. Background/Low – This indicates that the content can be transmitted in the slots left available after the Extreme High Priority, High Priority, and Normal Priority content has been scheduled. Application, p. 12, lines 14-21.



The service categories can include, for example: unknown/unspecified, administrative, maintenance, talent announcement, advertisement, news, sports, weather, traffic, emergency, alert, stocks, entertainment, restaurants, lodging, medical, health, hospitals, multimedia, audio, logo, and text. Application Figure 3. The service class can be a service grade that content providers request. Application, p. 13, lines 1-3. The service classes can include, for example, basic, preferred, premium, etc. In some embodiments, each service class may have a quality of service (QoS) assigned for the IBOC system. Application, p. 13, lines 1-3.

The scheduling system, *e.g.*, scheduling system 100 shown in FIG. 1A, also includes a scheduler, *e.g.*, scheduler 110 and/or 118, that sequences the data content for broadcast based on the arbitrator determinations of relative levels of data content. Application, FIG. 7; p. 6, lines 6-11; p. 11, lines 9-11; and p. 22, line 14 to p. 23 line 19. Depending on the gateway configuration as described above, the scheduler, *e.g.*, scheduler 110 and/or 118, may be a component of a centralized gateway 106 and/or a plurality of local gateways 114. For example, as illustrated in FIG. 1A, the scheduler 110 may be, for example, a component of the central gateway 106. Application, p. 9, lines 7-9. As another example, scheduler(s) 118 may also be a component(s) of local gateway(s) 114. In some embodiments, the schedulers 118 in the local gateways 114 schedule the data content by sequencing the data content for broadcast based on the arbitrator's determinations of relative levels of data content. Application, p. 11, lines 2-3.

The scheduling system, *e.g.*, scheduling system 100 shown in FIG. 1A, also includes an IBOC transmitter (*e.g.*, labeled as iExciter(s) in FIG. 1B) broadcasting the data content based upon the sequencing. Application, p. 7, lines 7-9; and p. 19, lines 7-9. As illustrated in the exemplary digital broadcast scheduling system shown in FIG. 1B, a centralized gateway (*e.g.*, labeled "CENTRALIZED GATEWAY in FIG. 1B, and also referred to as a Push Pull Gateway or iPPG) can push content to IBOC transmitters that may be, for example, radio transmitter stations (also referred to as iExciters). Application, p. 19, lines 7-9.

### **C. Independent Claim 37**

Independent claim 37 is directed to a method for intelligently scheduling digital broadcast data content, *e.g.*, such as can be carried out with the exemplary systems illustrated in FIGS. 1A-1C. Application, p. 6, lines 6-7. The method involves determining relative levels of data content based upon priority indicators, service categories, and service classes of data content, *e.g.*, such as can be carried out by arbitrators 108 and/or 116. Application, p. 6, lines 11-14; p. 9, lines 7-10; p. 11, lines 9-11; p. 12, line 12 to p. 13, line 6; and p. 23, line 20 to p. 24, line 6. The data content is sequenced for broadcast based upon the determined relative levels of data content, *e.g.*, such as can be carried out by schedulers 110 and/or 118. Application, Figure 7; p. 6, lines 6-11; p. 11, lines 9-11; and p. 22, line 14 to p. 23 line 19. Additionally, the data content is communicated to an IBOC network for transmission in accordance with the sequencing, *e.g.*, such as can be carried out by iBOC transmitter(s) labeled iExciter(s) in FIGS. 1B and 1C. Application, p. 7, lines 7-9; and p. 19, lines 7-9.

**D. Independent Claim 38**

Independent claim 38 is directed to a digital broadcast scheduling system, *e.g.*, such as system 100 illustrated in FIG. 1A. Application, p. 6, lines 6-7. The system comprises a computer processing system (*e.g.*, a conventional multi-nodal system or networking system) and a memory (*e.g.*, static or dynamic memory). Application, p. 32, lines 4-6. For example, the computer processing system may be embodied in one or more gateways such as gateways 106 and/or 114 shown in the example of FIG. 1A. The computer processing system is configured to execute a number of steps. One step involves determining relative levels of data content based upon priority indicators, service categories, and service classes of data content as described above. Application, p. 6, lines 11-14; p. 9, lines 7-10; p. 11, lines 9-11; p. 12, line 12 to p. 13, line 6; and p. 23, line 20 to p. 24, line 6. The data content is sequenced for broadcast based upon the determined relative levels of data content. Application, Figure 7; p. 6, lines 6-11; p. 11, lines 9-11; and p. 22, line 14 to p. 23 line 19. Additionally, the data content is communicated to an IBOC network for transmission in accordance with the sequencing. Application, p. 7, lines 7-9; and p. 19, lines 7-9.

**E. Independent Claim 39**

Independent claim 39 is directed to a computer readable medium having embodied therein computer instructions adapted for scheduling digital broadcast data content. Application, p. 6, lines 6-7 and p. 32, lines 5-8. The instructions are adapted to cause a computer processing system, *e.g.*, a conventional multi-nodal system or networking system, to execute a number of steps. Application, p. 32, lines 4-6. For example, the computer processing system may be embodied in one or more gateways such as gateways 106 and/or 114 shown in the example of FIG. 1A. One step involves determining relative levels of data content based upon priority indicators, service categories, and service classes of data content as described above. Application, p. 6, lines 11-14; p. 9, lines 7-10; p. 11, lines 9-11; p. 12, line 12 to p. 13, line 6; and p. 23, line 20 to p. 24, line 6. The data content is sequenced for

broadcast based upon the determined relative levels of data content. Application, Figure 7; p. 6, lines 6-11; p. 11, lines 9-11; and p. 22, line 14 to p. 23 line 19. Additionally, the data content is communicated to an IBOC network for transmission in accordance with the sequencing. Application, p. 7, lines 7-9; and p. 19, lines 7-9.

## **VI. Grounds of Rejection to be Reviewed on Appeal**

Claims 1, 5, 8-9, 13-18, and 37-39 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,721,337 (hereinafter "*Kroeger*"). Claims 7, 10, 19, 23, 25-28 and 31-36 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of U.S. Application Pub. No. 2002/0044567 to Voit *et al.* (hereinafter "*Voit*"). Claim 2 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of U.S. Pat. No. 5,935,218 to Beyda *et al.* (hereinafter "*Beyda*"). Claims 3-4 and 21-22 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of *Beyda* and further in view of *Voit*. Claim 20 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of *Voit* and further in view of *Beyda*. Claims 6 and 11 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of U.S. Pat. No. 5,615,249 to Solondz *et al.* (hereinafter "*Solondz*"). Claims 24 and 29 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of *Voit* and further in view of *Solondz*. Claim 12 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of U.S. Pat. No. 6,782,510 to Gross *et al.* (hereinafter "*Gross*"). Claim 30 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of *Voit* and further in view of *Gross*. These rejections of claims 1-39 are now appealed.

## **VII. Argument**

### **A. *Kroeger* Fails to Anticipate Claims 1, 5, 8-9, 13-18, and 37-39 Under 35 U.S.C. § 102(e) Because It Does Not Disclose Determining Relative Levels**

**of Data Content Based Upon Priority Indicators, Service Categories, and Service Classes of Data Content as Required by These Claims**

Claims 1, 5, 8-9, 13-18, and 37-39 stand rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by *Kroeger*.<sup>1</sup> To establish a *prima facie* case of anticipation under 35 U.S.C. § 102, the Examiner must demonstrate that a single prior art reference discloses all of the claim's essential elements.<sup>2</sup> Thus, the "exclusion of a claimed element from a prior art reference is enough to negate anticipation by that reference."<sup>3</sup>

The intelligent digital broadcast scheduling system of claim 1 includes an arbitrator that determines relative levels of data content based upon priority indicators, service categories, **and** service classes of data content. Claims 37, 38 and 39 recite a method, a system, and a computer readable medium, respectively, that involve, *inter alia*, determining relative levels of data content based upon priority indicators, service categories, and service classes of the data content.

In contrast, *Kroeger* does not disclose determining relative levels of data content based upon priority indicators, **and** service categories, **and** service classes of data content. *Kroeger* is directed to a method and apparatus for transmission and reception of compressed audio frames with prioritized messages for digital audio broadcasting. Specifically, Figure 2 of *Kroeger* reproduced below illustrates a process for assembling a modem frame. In Figure 2, audio inputs 50 are supplied on lines 50 and 52 and data messages having various levels of priority are supplied on lines 54, 56, and 58. *Kroeger* col. 4, lines 31-32. The data messages are stored in buffers 60, 62, and 64. *Kroeger* col. 4, lines 31-33. A dynamic scheduling

<sup>1</sup> Final Office Action dated April 23, 2007 at 2.

<sup>2</sup> *E.g.*, *Rockwell Inter. Corp. v. U.S.*, 147 F.3d 1358, 1363, 47 U.S.P.Q.2d 1027, 1031 (Fed. Cir. 1998); *Gechter v. Davidson*, 116 F.3d 1454, 1457, 43 U.S.P.Q.2d 1030, 1032 (Fed. Cir. 1997); *In re Donohue*, 766 F.2d 531, 534, 226 U.S.P.Q. 619, 621 (Fed. Cir. 1985); *W.L. Gore & Associates v. Garlock, Inc.*, 721 F.2d 1540, 1554, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

<sup>3</sup> *Atlas Powder Co. v. E.I. du Pont De Nemours & Co.*, 750 F.2d 1569, 1574, 224 U.S.P.Q. 409, 411 (Fed. Cir. 1984).

algorithm 66, or scheduler, coordinates assembly of the modem frame with an audio encoder 68. *Kroeger* col. 4, lines 33-35.

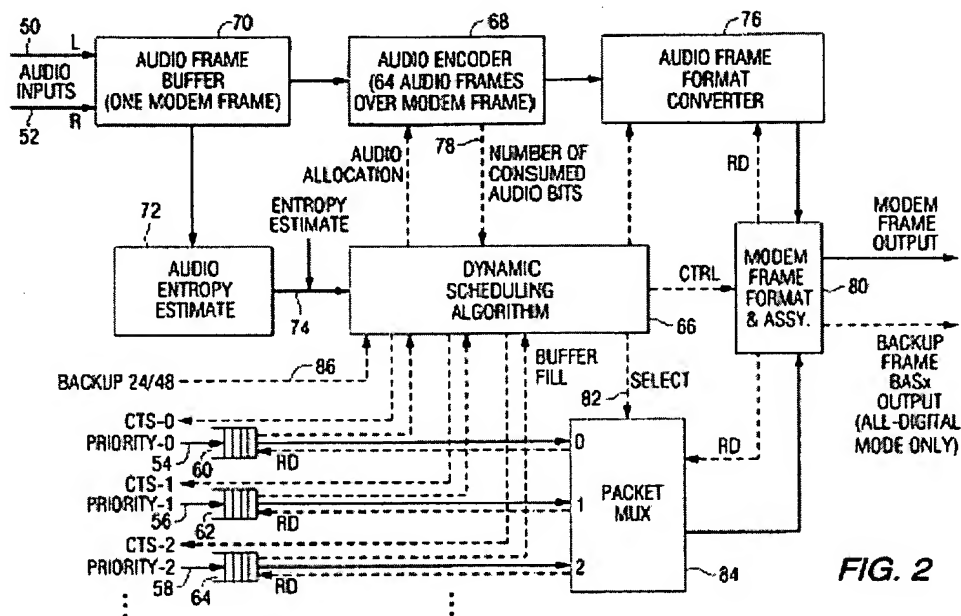


FIG. 2

The examiner cites to col. 4, line 45 – col. 5, line 28 and col. 11, lines 30-60 of *Kroeger* for allegedly disclosing the alleged priority indicators, service categories, and service classes. Applicants observe that *Kroeger* discloses priority classes for message prioritization. Specifically, *Kroeger* describes the scheduler determining audio quality based upon the priority of incoming data messages (e.g., high priority messages result in reduced audio quality). *Kroeger* col. 4, line 60 to col. 5, line 7. However, claims 1, 37, 38 and 39 require that the claimed determination of relative levels of data content is based upon priority indicators, **and** service categories **and** service classes, i.e., the determination is based upon all three of the priority indicators, service categories and service classes (while the determination could be based on additional factors, the claim requires it be based upon at least these three factors). *Kroeger* does not disclose determining relative levels of data content based upon priority indicators, service categories **and** service classes (i.e., all three of priority indicators, service categories and service classes). Accordingly, *Kroeger* cannot anticipate independent

claims 1, 37, 38 and 39 for at least these reasons. Claims 5, 8, 9, 13-18 are allowable at least by virtue of dependency.

In an Amendment, Applicants stated that *Kroeger* did not disclose the combination of priority indicators, service categories and service classes. Amendment dated March 8, 2007 at 13. The examiner took exception to those comments and stated that, "There is nothing in the claim stated that the levels of data content based upon a combination of 'priority indicators, service categories, and service classes.'" Office Action dated April 23, 2007 at 25. By those comments, Applicants did not mean that the priority indicators, service categories and service classes were combined in the sense of three quantities being combined into one quantity. Applicants simply meant that *Kroeger* did not disclose determining relative levels of data content based upon priority indicators, and service categories and service classes (*i.e.*, all three of priority indicators, service categories and service classes), as discussed above.

Applicants further point out that determining relative levels of data content based upon priority indicators, service categories, and service classes of data content according to the present application provides a more flexible approach for scheduling content for broadcast transmission than is disclosed or suggested by the cited art. For example, as reflected in FIG. 3 of the present application, service classes (*e.g.*, basic, preferred, premium, etc.) and priority (*e.g.*, normal, urgent, emergency) provide substantial flexibility in scheduling content, and the addition of service category (*e.g.*, unknown/unspecified, administrative, maintenance, talent announcement, advertisement, news, sports, weather, traffic, emergency, alert, stocks, entertainment, restaurants, lodging, medical, health, hospitals, multimedia, audio, logo, text, etc.) significantly increases the information from which relative levels of data content can be determined and upon which scheduling decisions can be made. Such flexibility is not disclosed or suggested by *Kroeger*. For at least these reasons, the 35 U.S.C. § 102(e) rejection over *Kroeger* should be reversed.

**B. The Office has not made out a prima facie case of obviousness against claims 2-4, 6, 7, 10-12, 19, and 20-36 because *Kroeger* is disqualified as prior art under 35 U.S.C. § 103(c)**

Claims 7, 10, 19, 23, 25-28 and 31-36 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of *Voit*. Claim 2 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of *Beyda*. Claims 3-4 and 21-22 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of *Beyda* and further in view of *Voit*. Claim 20 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of *Voit* and further in view of *Beyda*. Claims 6 and 11 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of *Solondz*. Claims 24 and 29 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of *Voit* and further in view of *Solondz*. Claim 12 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of *Gross*. Claim 30 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *Kroeger* in view of *Voit* and further in view of *Gross*.

*Kroeger* is disqualified as prior art under 35 U.S.C. § 103(c) in the obviousness rejections against the above-identified claims. Under 35 U.S.C. § 103(c), for an application to a claimed invention filed on or after November 29, 1999, subject matter that qualifies as prior art under only 35 U.S.C. §§ 102(e), 102(f) or 102(g) is disqualified as prior art in a § 103(a) rejection where that subject matter and the claimed invention were, “at the time the invention was made, owned by the same person or subject to an obligation of assignment to



the same person.”<sup>4</sup> In this case, the application of the present invention was filed on October 26, 2001, and *Kroeger* qualifies as prior art under only § 102(e). Further, the claimed invention of the present application was assigned to iBiquity Digital Corporation as evidenced by an assignment to iBiquity Digital Corporation that was executed on October 4, 2001, and recorded at the U.S. Patent and Trademark Office on October 26, 2001.<sup>5</sup> The *Kroeger* patent is assigned on its face to iBiquity Digital Corporation. The *Kroeger* application was initially assigned by the two inventors to USA Digital Radio, Inc. in August and September of 1999.<sup>6</sup> Subsequently, USA Digital Radio, Inc. changed its name to iBiquity Digital Corporation on August 21, 2000, which was recorded on April 11, 2001, prior to the filing of the present application.<sup>7</sup> Therefore, both the subject matter of *Kroeger* and the present invention were owned by or subject to an obligation of assignment to the same person at the time the present invention was made.

Moreover, Applicants have brought this argument to the Examiner’s attention twice, both in the Amendment dated March 8, 2007 at pages 14-15 and in the Pre-Appeal Brief Request for Review dated October 23, 2007 at pages 4-5. However, the Examiner has failed to address it or respond in any way whatsoever.

---

<sup>4</sup> 35 U.S.C. § 103(c); *see also* Manual of Patent Examining Procedure § 2146 (8<sup>th</sup> Edition, Revision 6, Sep. 2007).

<sup>5</sup> See attached in the Evidence Appendix a copy of the assignment recorded at reel 012494, frame 0058.

<sup>6</sup> See attached in the Evidence Appendix a copy of the assignments from the two inventors, the first recorded at reel 010198, frame 0643 and the second at reel 010536, frame 0185.

<sup>7</sup> See attached in the Evidence Appendix a copy of the name change and associated certificate of merger recorded at reel 011658, frame 0769, whereby Lucent Digital Radio, Inc. merged into USA Digital Radio, Inc., and wherein USA Digital Radio’s name was then changed to iBiquity Digital Corporation.

**C. The Office Has Not Made Out A Prima Facie Case Of Obviousness Against Claims 2-4, 6, 7, 10-12, And 19-36 Because *Kroeger* Is Not Available As Prior Art And The Secondary References Fail To Make Up For This Deficiency**

1. The Office Has Not Made Out A Prima Facie Case Of Obviousness Against Claims 7, 10, 19, 23, 25-28 and 31-36 Because *Kroeger* Is Not Available As Prior Art And *Voit* Fails To Make Up For This Deficiency

Claims 7, 10, 19, 23, 25-28 and 31-36 stand rejected under 35 U.S.C. § 103 as being obvious over *Kroeger* in view of *Voit*.<sup>8</sup> Under *KSR Int'l Co. v. Teleflex Inc (KSR)*, the Court stated that “rejections on obviousness cannot be sustained by mere conclusory statements; instead there must be some *articulated reasoning with some rational underpinning* to support the legal conclusion of obviousness.” (emphasis added)<sup>9</sup> Even after *KSR*, to show *prima facie* obviousness, all claim limitations must be taught or suggested by the prior art.<sup>10</sup> The Examiner has failed to meet this burden.

The Office has not made out a *prima facie* case of obviousness because *Kroeger* is not available as prior art and because *Voit* does not make up for that deficiency. *Voit* is directed to automatic programming of customer premises equipment for vertical services integration.<sup>11</sup> Specifically, *Voit* discloses a system for delivering QoS to asymmetric digital subscriber line (ADSL) data network subscribers.<sup>12</sup> The Office relies on *Voit* for allegedly disclosing, among other things: (a) “priority indicators” that comprise one or more of a level of service

---

<sup>8</sup> Final Office Action dated April 23, 2007 at 6.

<sup>9</sup> 550 U.S. \_\_\_, 78 USPQ2d 1385, 1396 (2007).

<sup>10</sup> *In re Royka*, 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974). See, e.g., Board of Patent Appeals and Interferences, *Ex parte Kawka*, Appeal 2007-2181 at 5 (July 31, 2007) (citing *In re Royka* for the same proposition).

<sup>11</sup> *Voit* abstract.

<sup>12</sup> *Id.*

field, bit rate requirements field, latency grades field, or best effort field;<sup>13</sup> (b) “service classes” that comprise at least basic, preferred, or premium;<sup>14</sup> and (c) “one or more gateways arbitrating”.<sup>15</sup>

However, *Voit* does not disclose the elements the Office relied upon in *Kroeger*, namely: an arbitrator, the arbitrator determining relative levels of data content based upon priority indicators, service categories, and service classes of data content received from a plurality of content providers; a scheduler, the scheduler sequencing the data content for broadcast based on the arbitrator determinations of relative levels of data content; and an in-band on-channel (IBOC) transmitter broadcasting the data content based upon the sequencing.<sup>16</sup> Thus *Voit* does not make up for the fact that the Office cannot rely on *Kroeger* for these elements. Accordingly, the rejection should be reversed.

2. The Office Has Not Made Out A Prima Facie Case Of Obviousness Against Claim 2 Because *Kroeger* Is Not Available As Prior Art And *Beyda* Fails To Make Up For This Deficiency

Claim 2 stands rejected under 35 U.S.C. § 103 as being obvious over *Kroeger* in view of *Beyda*.<sup>17</sup> To show *prima facie* obviousness, all claim limitations must be taught or suggested by the prior art.<sup>18</sup> The Examiner has failed to meet this burden.

The Office has not made out a *prima facie* case of obviousness because *Kroeger* is not available as prior art and because *Beyda* does not make up for that deficiency. *Beyda* is directed to a method and apparatus for bus network prioritization using the broadcast of delay

---

<sup>13</sup> The Office relies on this alleged disclosure in *Voit* to reject claim 7 in the Final Office Action dated April 23, 2007 at pages 7.

<sup>14</sup> The Office relies on this alleged disclosure in *Voit* to reject claim 10 in the Final Office Action dated April 23, 2007 at pages 8.

<sup>15</sup> The Office relies on this alleged disclosure in *Voit* to reject claims 3, 4, 19, and the dependent claims of claim 19 (*i.e.*, claims 21-23, 25-28, and 31-36) in the Final Office Action dated April 23, 2007 at pages 8-12.

<sup>16</sup> The Office relies on this alleged disclosure in *Kroeger* in the Final Office Action dated April 23, 2007 at page 7.

<sup>17</sup> Final Office Action dated April 23, 2007 at page 12.

<sup>18</sup> *In re Royka*, 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974).

time to lower priority users from high priority users in a token or loop network.<sup>19</sup>

Specifically, *Beyda* discloses a system for allocating network bandwidth.<sup>20</sup> The Office relies on *Beyda* for allegedly disclosing “a hierarchy of gateways.”<sup>21</sup>

However, *Beyda* does not disclose the elements the Office relied upon in *Kroeger*, namely: an arbitrator, the arbitrator determining relative levels of data content based upon priority indicators, service categories, and service classes of data content received from a plurality of content providers; a scheduler, the scheduler sequencing the data content for broadcast based on the arbitrator determinations of relative levels of data content; and an in-band on-channel (IBOC) transmitter broadcasting the data content based upon the sequencing.<sup>22</sup> Thus *Beyda* does not make up for the fact that the Office cannot rely on *Kroeger* for these elements. Accordingly, the rejection should be reversed.

3. The Office Has Not Made Out A Prima Facie Case Of Obviousness Against Claims 3, 4 And 21-22 Because *Kroeger* Is Not Available As Prior Art And *Beyda* In View Of *Voit* Fails To Make Up For This Deficiency

Claims 3, 4, and 21-22 stand rejected under 35 U.S.C. § 103 as being obvious over *Kroeger* in view of *Beyda* and further in view of *Voit*.<sup>23</sup> To show *prima facie* obviousness, all claim limitations must be taught or suggested by the prior art.<sup>24</sup> The Examiner has failed to meet this burden.

The Office has not made out a *prima facie* case of obviousness because *Kroeger* is not available as prior art and because *Beyda* in view of *Voit* does not make up for that deficiency. As previously described, *Beyda* and *Voit* do not disclose the elements the Office relied upon

---

<sup>19</sup> *Beyda* abstract.

<sup>20</sup> *Id.*

<sup>21</sup> The Office relies on this alleged disclosure in *Beyda* to reject claim 2 in the Office Action dated April 23, 2007 at page 13.

<sup>22</sup> The Office relies on this alleged disclosure in *Kroeger* in the Office Action dated April 23, 2007 at page 12.

<sup>23</sup> Final Office Action dated April 23, 2007 at page 13.

<sup>24</sup> *In re Royka*, 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974).

in *Kroeger*, namely: an arbitrator, the arbitrator determining relative levels of data content based upon priority indicators, service categories, and service classes of data content received from a plurality of content providers; a scheduler, the scheduler sequencing the data content for broadcast based on the arbitrator determinations of relative levels of data content; and an in-band on-channel (IBOC) transmitter broadcasting the data content based upon the sequencing.<sup>25</sup> Thus *Beyda* in view of *Voit* does not make up for the fact that the Office cannot rely on *Kroeger* for these elements. Accordingly, the rejection should be reversed.

4. The Office Has Not Made Out A Prima Facie Case Of Obviousness Against Claim 20 Because *Kroeger* Is Not Available As Prior Art And *Voit* In View Of *Beyda* Fails To Make Up For This Deficiency

Claim 20 stands rejected under 35 U.S.C. § 103 as being obvious over *Kroeger* in view of *Voit* and further in view of *Beyda*.<sup>26</sup> To show *prima facie* obviousness, all claim limitations must be taught or suggested by the prior art.<sup>27</sup> The Examiner has failed to meet this burden.

The Office has not made out a *prima facie* case of obviousness because *Kroeger* is not available as prior art and because *Voit* and further in view of *Beyda* does not make up for that deficiency. As previously described, *Voit* and *Beyda* do not disclose the elements the Office relied upon in *Kroeger*, namely: an arbitrator, the arbitrator determining relative levels of data content based upon priority indicators, service categories, and service classes of data content received from a plurality of content providers; a scheduler, the scheduler sequencing the data content for broadcast based on the arbitrator determinations of relative levels of data content; and an in-band on-channel (IBOC) transmitter broadcasting the data content based

<sup>25</sup> The Office relies on this alleged disclosure in *Kroeger* in the Office Action dated April 23, 2007 at page 14.

<sup>26</sup> Final Office Action dated April 23, 2007 at page 17.

<sup>27</sup> *In re Royka*, 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974).

upon the sequencing.<sup>28</sup> Thus *Voit* in view of *Beyda* does not make up for the fact that the Office cannot rely on *Kroeger* for these elements. Accordingly, the rejection should be reversed.

5. The Office Has Not Made Out A Prima Facie Case Of Obviousness Against Claims 6 and 11 Because *Kroeger* Is Not Available As Prior Art And *Solondz* Fails To Make Up For This Deficiency

Claims 6 and 11 stand rejected under 35 U.S.C. § 103 as being obvious over *Kroeger* in view of *Solondz*.<sup>29</sup> To show *prima facie* obviousness, all claim limitations must be taught or suggested by the prior art.<sup>30</sup> The Examiner has failed to meet this burden.

The Office has not made out a *prima facie* case of obviousness because *Kroeger* is not available as prior art and because *Solondz* does not make up for that deficiency. *Solondz* is directed to directed to service prioritization in a cellular telephone system.<sup>31</sup> Specifically, *Solondz* discloses servicing call establishment requests in a cellular telephone system on a priority basis.<sup>32</sup> The Office relies on *Solondz* for allegedly disclosing: priority indicators including “extreme high priority,” “high priority,” “normal,” and “low”;<sup>33</sup> and service categories including “priority service,” “premium service,” “normal service,” “basic service,” and “economy service.”<sup>34</sup>

However, *Solondz* does not disclose the elements the Office relied upon in *Kroeger*, namely: an arbitrator, the arbitrator determining relative levels of data content based upon priority indicators, service categories, and service classes of data content received from a

<sup>28</sup> The Office relies on this alleged disclosure in *Kroeger* in the Office Action dated April 23, 2007 at page 17.

<sup>29</sup> Final Office Action dated April 23, 2007 at 18.

<sup>30</sup> *In re Royka*, 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974).

<sup>31</sup> *Solondz* abstract.

<sup>32</sup> *Id.*

<sup>33</sup> The Office relies on this alleged disclosure in *Solondz* to reject claim 6 in the Office Action dated April 23, 2007 at page 19.

<sup>34</sup> The Office relies on this alleged disclosure in *Solondz* to reject claim 11 in the Office Action dated April 23, 2007 at page 19.

plurality of content providers; a scheduler, the scheduler sequencing the data content for broadcast based on the arbitrator determinations of relative levels of data content; and an in-band on-channel (IBOC) transmitter broadcasting the data content based upon the sequencing.<sup>35</sup> Thus *Solondz* does not make up for the fact that the Office cannot rely on *Kroeger* for these elements. Accordingly, the rejection should be reversed.

6. The Office Has Not Made Out A Prima Facie Case Of Obviousness Against Claim 24 and 29 Because *Kroeger* Is Not Available As Prior Art And *Voit* In View Of *Solondz* Fails To Make Up For This Deficiency

Claims 24 and 29 stand rejected under 35 U.S.C. § 103 as being obvious over *Kroeger* in view of *Voit* and further in view of *Solondz*.<sup>36</sup> To show *prima facie* obviousness, all claim limitations must be taught or suggested by the prior art.<sup>37</sup> The Examiner has failed to meet this burden.

The Office has not made out a *prima facie* case of obviousness because *Kroeger* is not available as prior art and because *Voit* and further in *Solondz* do not make up for that deficiency. As previously described, *Voit* and *Solondz* do not disclose the elements the Office relied upon in *Kroeger*, namely: an arbitrator, the arbitrator determining relative levels of data content based upon priority indicators, service categories, and service classes of data content received from a plurality of content providers; a scheduler, the scheduler sequencing the data content for broadcast based on the arbitrator determinations of relative levels of data content; and an in-band on-channel (IBOC) transmitter broadcasting the data content based upon the sequencing.<sup>38</sup> Thus *Voit* in view of *Solondz* does not make up for the fact that the

---

<sup>35</sup> The Office relies on this alleged disclosure in *Kroeger* in the Office Action dated April 23, 2007 at page 18.

<sup>36</sup> Final Office Action dated April 23, 2007 at 20.

<sup>37</sup> *In re Royka*, 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974).

<sup>38</sup> The Office relies on this alleged disclosure in *Kroeger* in the Office Action dated April 23, 2007 at page 20.

Office cannot rely on *Kroeger* for these elements. Accordingly, the rejection should be reversed.

7. The Office Has Not Made Out A Prima Facie Case Of Obviousness Against Claim 12 Because *Kroeger* Is Not Available As Prior Art And *Gross* Fails To Make Up For This Deficiency

Claim 12 stands rejected under 35 U.S.C. § 103 as being obvious over *Kroeger* in view of *Gross*.<sup>39</sup> To show *prima facie* obviousness, all claim limitations must be taught or suggested by the prior art.<sup>40</sup> The Examiner has failed to meet this burden.

The Office has not made out a *prima facie* case of obviousness because *Kroeger* is not available as prior art and because *Gross* does not make up for that deficiency. *Gross* is directed to a word checking tool for controlling the language content in documents using dictionaries with modifiable status fields.<sup>41</sup> Specifically, *Gross* discloses a word checker that is capable of identifying potentially inappropriate word choices so that unintentional errors are not introduced into electronic text documents.<sup>42</sup> The Office relies on *Gross* for allegedly disclosing “arbitrator determinations are further based upon language filter identifiers.”<sup>43</sup>

However, *Gross* does not disclose the elements the Office relied upon in *Kroeger*, namely: an arbitrator, the arbitrator determining relative levels of data content based upon priority indicators, service categories, and service classes of data content received from a plurality of content providers; a scheduler, the scheduler sequencing the data content for broadcast based on the arbitrator determinations of relative levels of data content; and an in-band on-channel (IBOC) transmitter broadcasting the data content based upon the

---

<sup>39</sup> Final Office Action dated April 23, 2007 at 22.

<sup>40</sup> *In re Royka*, 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974).

<sup>41</sup> *Gross* abstract.

<sup>42</sup> *Id.*

<sup>43</sup> The Office relies on this alleged disclosure in *Gross* to reject claim 2 in the Final Office Action dated April 23, 2007 at page 22.



sequencing.<sup>44</sup> Thus *Gross* does not make up for the fact that the Office cannot rely on *Kroeger* for these elements. Accordingly, the rejection should be reversed.

8. The Office Has Not Made Out A Prima Facie Case Of Obviousness Against Claim 30 Because *Kroeger* Is Not Available As Prior Art And *Voit* In View Of *Gross* Fails To Make Up For This Deficiency

Claim 30 stands rejected under 35 U.S.C. § 103 as being obvious over *Kroeger* in view of *Voit* and further in view of *Gross*.<sup>45</sup> To show *prima facie* obviousness, all claim limitations must be taught or suggested by the prior art.<sup>46</sup> The Examiner has failed to meet this burden.

The Office has not made out a *prima facie* case of obviousness because *Kroeger* is not available as prior art and because *Voit* and further in *Gross* does not make up for that deficiency. As previously described, *Voit* and *Gross* do not disclose the elements the Office relied upon in *Kroeger*, namely: an arbitrator, the arbitrator determining relative levels of data content based upon priority indicators, service categories, and service classes of data content received from a plurality of content providers; a scheduler, the scheduler sequencing the data content for broadcast based on the arbitrator determinations of relative levels of data content; and an in-band on-channel (IBOC) transmitter broadcasting the data content based upon the sequencing.<sup>47</sup> Thus *Voit* in view of *Gross* does not make up for the fact that the Office cannot rely on *Kroeger* for these elements. Accordingly, the rejection should be reversed.

**D. Conclusion**

The *Kroeger* reference fails to disclose all of the elements of claims 1, 5, 8-9, 13-18, and 37-39, and therefore cannot anticipate these claims. Furthermore, the Examiner has

<sup>44</sup> The Office relies on this alleged disclosure in *Kroeger* in the Final Office Action dated April 23, 2007 at page 22.

<sup>45</sup> Final Office Action dated April 23, 2007 at page 23.

<sup>46</sup> *In re Royka*, 490 F.2d 981, 985, 180 USPQ 580, 583 (CCPA 1974).

<sup>47</sup> The Office relies on this alleged disclosure in *Kroeger* in the Office Action dated April 23, 2007 at page 23.

erroneously relied on *Kroeger* to make rejections under § 103(a) even though *Kroeger* is disqualified as prior art under § 103(c) because *Kroeger* was commonly owned by or subject an obligation to assignment to the same person. Moreover, in the obviousness rejections, the secondary references do not make up for the deficiencies that result from *Kroeger*'s unavailability as prior art. Accordingly, the Office has failed to prove a *prima facie* case of obviousness against claims 2-4, 6, 7, 10-12, 19, and 20-36. Thus, Appellant believes the rejected claims are in condition for allowance. Appellant respectfully requests reversal of the Examiner's rejection and allowance of these claims.

**VIII. Claims Appendix**

A Claims Appendix containing a copy of the claims subject to this appeal is attached.

**IX. Evidence Appendix**

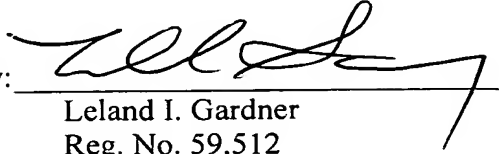
No evidence is being submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132. An evidence appendix is attached that contains the assignment documents for the present application and the *Kroeger* reference.

**X. Related Proceedings Appendix**

There are no related proceedings. A related proceedings appendix indicating "None" is attached.

Respectfully submitted,

Date: May 9, 2008

By:   
Leland I. Gardner  
Reg. No. 59,512

Jones Day  
51 Louisiana Avenue, N.W.  
Washington, DC 20001-2113  
Tel. (202) 879-3939

**CLAIMS APPENDIX**

1. (Previously presented) An intelligent digital broadcast scheduling system, said scheduling system arbitrating the use of specified broadcast time slots, said broadcast comprising data content including one or more of audio, video, text, graphics, images, or data, said scheduling system comprising:
  - an arbitrator, said arbitrator determining relative levels of data content based upon priority indicators, service categories, and service classes of data content received from a plurality of content providers;
  - a scheduler, said scheduler sequencing said data content for broadcast based on said arbitrator determinations of relative levels of data content; and
  - an in-band on-channel (IBOC) transmitter broadcasting said data content based upon said sequencing.
2. (Original) An intelligent digital broadcast scheduling system, as per claim 1, wherein said system comprises a hierarchy of gateways, one or more first level gateways arbitrating and scheduling a first data content level and one or more second level gateways operatively connected to said first level gateway(s) and arbitrating and scheduling a second data content level.
3. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 2, wherein said one or more first level gateways arbitrating and scheduling a first data content level comprise at least a central gateway receiving requests from the plurality of content providers.

4. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 2, wherein said one or more second level gateways receive requests from a plurality of local content providers.
5. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 1, wherein said data content is arbitrated based on a plurality of the following parameters: content type, transmission requirements, data type, time, and user device requirements.
6. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 1, wherein said data content is prioritized, based on said priority indicators, as one of the following: extreme high priority for immediate data transmission, high priority for transmission at earliest opportunity, normal according to requested repetition rate, and low for transmission in slots left free after transmission of messages of extreme high priority, high priority, and normal priority.
7. (Original) An intelligent digital broadcast scheduling system, as per claim 1, wherein said priority indicators comprise one or more of the following fields: level of service, bit rate requirements, latency grades, or best effort required.
8. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 1, wherein said arbitrator determinations are further based upon a service operator code identifying said data content provider.

9. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 1, wherein said arbitrator determinations are further based upon a destination address representing a broadcast, multicast, or unicast scenario.
10. (Original) An intelligent digital broadcast scheduling system, as per claim 1, wherein said service classes comprise at least basic, preferred, or premium.
11. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 1, wherein said service categories comprise at least one, or a combination of: administrative, maintenance, advertisement, news, sports, weather, traffic, emergency alert, stocks, entertainment, travel entities, medical, multimedia, audio, logo, or text.
12. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 1, wherein said arbitrator determinations are further based upon language filtration identifiers.
13. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 1, wherein said arbitrator determinations are further based upon periodicity requirements.
14. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 1, wherein said arbitrator determinations are further based upon validity determinations including periods of validity.

15. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 1, wherein said arbitrator determinations are further based upon time stamps of said data content.
16. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 14, wherein said arbitrator determinations are further based upon periodicity requirements.
17. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 1, wherein said arbitrator determinations are further based upon geographic classifications.
18. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 1, wherein said scheduler processes data for controlling display of information at a receiver.
19. (Previously presented) An intelligent digital broadcast scheduling system, said scheduling system arbitrating the use of specified broadcast time slots, said broadcast comprising data content including one or more of audio, video, text, graphics, images, or data, said scheduling system comprising:
  - one or more gateways receiving data content from a plurality of data content providers;
  - an arbitrator, said arbitrator determining relative levels of data content based upon priority indicators, service categories and service classes of data content received from the plurality of content providers;

a scheduler, said scheduler sequencing said data content for broadcast based on said arbitrator determinations of relative levels of data content, and  
an in-band on-channel (IBOC) transmitter broadcasting said data content based upon said sequencing.

20. (Original) An intelligent digital broadcast scheduling system, as per claim 19, wherein said system comprises a hierarchy of gateways, one or more first level gateways arbitrating and scheduling a first data content level and one or more second level gateways operatively connected to said first level gateway(s) and arbitrating and scheduling a second data content level.
21. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 20, wherein said one or more first level gateways arbitrating and scheduling a first data content level comprise at least a central gateway receiving requests from a plurality of content providers.
22. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 20, wherein said one or more second level gateways receive requests from a plurality of local content providers.
23. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 19, wherein said data content is arbitrated based on a plurality of the following parameters: content type, transmission requirements, data type, time, end user device requirements.

24. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 19, wherein said data content is prioritized, based on said priority indicators, as one of the following: extreme high priority for immediate data transmission, high priority for transmission at earliest opportunity, normal according to requested repetition rate, and-low for transmission in slots left free after transmission of messages of extreme high priority, high priority, and normal priority.
25. (Original) An intelligent digital broadcast scheduling system, as per claim 19, wherein said priority indicators comprise one or more of the following fields: level of service, bit rate requirements, latency grades, best effort required.
26. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 19, wherein said arbitrator determinations are further based upon a service operator code identifying said data content provider.
27. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 19, wherein said arbitrator determinations are further based upon a receiver destination address representing a broadcast, multicast or unicast scenario.
28. (Original) An intelligent digital broadcast scheduling system, as per claim 19, wherein said service classes comprise at least basic, preferred, or premium.
29. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 19, wherein said service categories comprise at least one, or a combination of: administrative, maintenance, advertisement, news, sports, weather, traffic, emergency alert, stocks, entertainment, travel entities, medical, multimedia, audio, logo, or text.



30. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 19, wherein said arbitrator determinations are further based upon language filtration identifiers.
31. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 19, wherein said arbitrator determinations are further based upon periodicity requirements.
32. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 19, wherein said arbitrator determinations are further based upon validity determinations including periods of validity.
33. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 19, wherein said arbitrator determinations are further based upon time stamps of said data content.
34. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 32, wherein said arbitrator determinations are further based upon periodicity requirements.
35. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 19, wherein said arbitrator determinations are further based upon geographic classifications.

36. (Previously presented) An intelligent digital broadcast scheduling system, as per claim 19, wherein said scheduler processes data for controlling display of information at a receiver.
37. (Previously presented) A method for intelligently scheduling digital broadcast data content, comprising the steps of:
- determining relative levels of data content based upon priority indicators, service categories, and service classes of said data content;
  - sequencing said data content for broadcast based upon said determining of relative levels of data content; and
  - communicating said data content to an in-band on-channel (IBOC) network in accordance with said sequencing.
38. (Previously presented) A digital broadcast scheduling system, comprising:
- a computer processing system; and
  - a memory, wherein the computer processing system is configured to execute the steps of:
- determining relative levels of data content based upon priority indicators, service categories, and service classes of said data content;
  - sequencing said data content for broadcast based upon said determining of relative levels of data content; and
  - communicating said data content to an in-band on-channel (IBOC) network in accordance with said sequencing.
39. (Previously presented) A computer readable medium having embodied therein computer instructions adapted for scheduling digital broadcast data content, said instructions being adapted to cause a computer processing system to execute steps of:

determining relative levels of data content based upon priority indicators,  
service categories, and service classes of said data content;

sequencing said data content for broadcast based upon said determining of  
relative levels of data content; and

communicating said data content to an in-band on-channel (IBOC) network in  
accordance with said sequencing..

**EVIDENCE APPENDIX**

The following ownership documents are attached hereto:

- 1) Assignment from Majid Syed to iBiquity Digital Corporation of U.S. Patent App. Serial No. 10/044,195 (the present application) recorded at reel 012494, frame 0058.
- 2) Assignment from Brian Kroeger to USA Digital Radio, Inc. of U.S. Patent App. Serial No. 09/382,716 (U.S. Patent No. 6,721,337) recorded at reel 010198, frame 0643.
- 3) Assignment from Stephen Mattson to USA Digital Radio, Inc. of U.S. Patent App. Serial No. 09/382,716 (U.S. Patent No. 6,721,337) recorded at reel 010536, frame 0185.
- 4) Change of name from USA Digital Radio, Inc. to iBiquity Digital Corporation recorded at reel 011658, frame 0769.

**RELATED PROCEEDINGS APPENDIX**

**NONE**

(There are no related proceedings.)

01-28-2002



REC

101959674

JET

 J1060 U.S. PTO  
 10/04/01  
 10726701

To The Honorable Commissioner of Patents and Trademarks:  
 Please record the attached original documents or copy thereof.

<p>1. Name of conveying party:</p> <p>Name: <u>Majid Syed</u> <i>10/26/01</i></p> <p>Address: <u>97 York Drive</u>  <u>Princeton, NJ 08540</u></p> <p>Name: _____</p> <p>Address: _____</p> <p>Additional name(s) of conveying party(ies) attached? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>2. Name and address of receiving party:</p> <p>Name: <u>iBiquity Digital Corporation</u></p> <p>Address: <u>20 Independence Boulevard</u>  <u>Warren, NJ 07059</u></p> <p>Additional name(s) &amp; addresses attached? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>3. Nature of conveyance:</p> <p>Assignment</p> <p>Execution Date(s): <u>October 4, 2001</u></p>	<p>4. Patent Application number(s):</p> <p>Execution Date(s): <u>October 4, 2001</u></p>
<p>5. Name and address of party to whom correspondence concerning document should be mailed:</p> <p>Name: <u>Blaney Harper</u></p> <p>Address: <u>Jones, Day, Reavis &amp; Pogue</u>  <u>51 Louisiana Ave., N.W.</u>  <u>Washington, DC 20001-2113</u></p>	<p>6. Total number of applications involved:</p> <p style="text-align: center;">1</p> <p>7. Total fee (37 CFR 3.41): \$40.00        -check enclosed</p>

DO NOT USE THIS SPACE

8. Statement and signature.  
*To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of original document.*

Brian D. Lefort, Reg. No. 43,747

October 26, 2001

Name of Person Signing

Signature

Date

Total number of pages comprising cover sheet: 1

01/25/2002 DBYRHE 00000292 10044195

01 FC1581

40.00 UP

Express Mail Label No.  
 EL156428107US

PATENT  
 REEL: 012494 FRAME: 0058

Date: Oct. 4, 2001

**MAJHD SAYED** Majid Syed

**Witnesses:**

STATE OF \_\_\_\_\_ )  
 : SS  
COUNTY OF \_\_\_\_\_ )

On this 4<sup>th</sup> day of October, 2001, before me, the subscriber, personally came **MAJID SAYED**, to me known and known to me to be the same person described in and who executed the foregoing instrument and duly acknowledged to me that he executed the same as his free act and deed.

(Seal)

Francis A. Prieny  
Notary Public

**FRANCES A. O'BRIEN**  
**NOTARY PUBLIC OF NEW JERSEY**  
**Commission Expires 4/15/2003**

## ASSIGNMENT

IN CONSIDERATION of the sum of One Dollar (\$1.00) to me in hand paid, and for other good and valuable consideration, receipt and sufficiency of which I hereby acknowledge, I,

~~MAJID SAYED~~ Majid Syed

believing myself to be the inventor of a certain invention or discovery in

### ARBITRATOR SYSTEM AND METHOD FOR NATIONAL AND LOCAL CONTENT DISTRIBUTION

as fully set forth and described in my application for United States Letters Patent executed concurrently herewith

and being the owner of all right, title and interest in and to said application and invention, warranting that I have not granted or agreed to grant to others any assignments, licenses, mortgages, or other rights or encumbrances regarding said application and invention, and believing that I have full right to convey the entire interest, both legal and equitable herein assigned, do hereby sell, assign, transfer and set over unto

### IBIQUITY DIGITAL CORPORATION

its assigns and nominees, the entire right, title and interest in and to said application and invention together with any and all other applications and patents either United States or foreign upon the same invention which I may now or hereafter have, and all divisions, reissues, continuations, continuations-in-part, substitutions and extensions thereof and all rights to obtain patents thereon, together with the right to apply for letters patent in foreign countries with full benefit of such priorities as may now or hereafter be granted to us by law or by treaty, including any international convention.

And I hereby covenant and agree that I will communicate to said Assignee,

### IBIQUITY DIGITAL CORPORATION

its assignees and nominees, all facts known to me respecting said invention and will, upon their request at any time, but without expense to me, sign all lawful papers, execute all original, divisional, substitute, continuing and reissue applications and assignments, make all rightful oaths, testify as to facts relating to said invention in any legal proceedings, and generally do everything reasonable and proper to aid said Assignee,

### IBIQUITY DIGITAL CORPORATION

its assigns and nominees, to receive proper protection for said invention in all countries.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal on the date indicated hereinafter.



FORM PTO-1595

(Rev. 6-93)

09-01-1999

DEPARTMENT OF COMMERCE

Patent and Trademark Office

ATTORNEY DOCKET NO:

RECOR



101131521

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents on a copy thereof.

1. Name of conveying party(ies):

KROEGER, WILLIAM BRIAN

2. Name and address of receiving party(ies):

Name: USA DIGITAL RADIO, INC.

Internal Address:

Street Address: 8865 STANFORD BOULEVARD

City: COLUMBIA

State: MD

Zip: 21045

Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ NoAdditional name(s) & address(es) attached? ☐ Yes ☒ No

3. Nature of conveyance:

- ☒ Assignment ☐ Merger  
☐ Security Agreement ☐ Change of Name  
☐ Other \_\_\_\_\_

Execution Date: AUGUST 23, 1999

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is: AUGUST 23, 1999.

A. Patent Application No.(s):

09/380716

B. Patent No.(s)

Additional numbers attached? ☐ Yes ☒ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Robert P. Lenart, Esquire

Internal address: Eckert Seamans Cherin &amp; Mellott, LLC

Street Address: 600 Grant Street  
44th Floor

City: Pittsburgh State: PA Zip: 15219

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41) ..... \$ 40.00

- ☐ Enclosed  
☒ Authorized to be charged to deposit account

8. Deposit account number:

02-2556

(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Robert P. Lenart  
Registration No. 30,654

Signature

Date

Total number of pages including cover sheet, attachments, and documents: 5

09/01/1999 MTHA11 00000026 022556

01 FC 581 40.00 CH

Mail documents to be recorded with required cover sheet information to:  
Commissioner of Patents and Trademarks, Box Assignments  
Washington, DC 20231

PT:387783

PATENT  
REEL: 010198 FRAME: 0643

**ASSIGNMENT**

WHEREAS, I **BRIAN WILLIAM KROEGER** and **STEPHEN DOUGLAS MATTSON**, of 12813 Amberwoods Way, Sykesville, in the County of **Howard**, State of **Maryland 21784** and 179 Cold Stream Trail, Felton, in the County of \_\_\_\_\_, State of **Pennsylvania 17322**; respectively, have invented certain improvements in: **METHOD AND APPARATUS FOR TRANSMISSION AND RECEPTION OF COMPRESSED AUDIO FRAMES WITH PRIORITIZED MESSAGES FOR DIGITAL AUDIO BROADCASTING**, for which I am about to make application for Letters Patent of the United States; and

WHEREAS, **USA DIGITAL RADIO, INC.**, a corporation organized and existing under the laws of the State of Ohio, having its principal place of business at 8865 Stanford Boulevard, Columbia, Maryland 21045, is desirous of acquiring an interest therein;

NOW, THEREFORE, for and in consideration of continued employment and/or other undertakings and/or other good and valuable consideration, receipt of which is hereby acknowledged, we, **BRIAN WILLIAM KROEGER** and **STEPHEN DOUGLAS MATTSON**, by these presents do sell, assign, and transfer unto said **USA DIGITAL RADIO, INC.**, its successors and assigns, the full and exclusive right in the United States of America and all foreign countries to the said invention as described in the specification executed by us on the 23<sup>rd</sup> day of August, 1999; and the \_\_\_\_\_ day of \_\_\_\_\_, 1999; respectively, said invention, all applications for Letters Patent and all Letters Patent therefor, to be held and enjoyed by the said **USA DIGITAL RADIO, INC.**, for its own use and behoof and for its legal representatives, to the full end of the term for which said Letters Patent are granted, as fully and entirely as the same would have been held by us had this Assignment and sale not been made; and I hereby covenant and agree to execute all instruments or documents required or requested for the making and prosecution of applications for

Letters Patent of the United States of America and all foreign countries or, for litigation regarding, or for the purpose of protecting title to the said invention or Letters Patent therefor for the benefit of our assignee without further or other compensation than that above set forth; and I hereby request the Commissioner of Patents and Trademarks to issue said Letters Patent to **USA DIGITAL RADIO, INC.**, as assignee thereof.

  
**BRIAN WILLIAM KROEGER**

STATE OF MARYLAND

)

) SS:

COUNTY OF HOWARD

)

On this 23<sup>rd</sup> day of August, 1999, before me personally appeared **BRIAN WILLIAM KROEGER** to me personally known as the individual who executed the foregoing instrument and who acknowledged to me that he executed the same of his own free will for the purposes therein set forth.

  
 Notary Public

My Commission Expires: 3/17/2001

(SEAL)

STEPHEN DOUGLAS MATTSON

STATE OF PENNSYLVANIA

)

) SS:

COUNTY OF \_\_\_\_\_

)

On this \_\_\_\_ day of \_\_\_\_\_, 19\_\_, before me personally appeared **STEPHEN DOUGLAS MATTSON** to me personally known as the individual who executed the foregoing instrument and who acknowledged to me that he executed the same of his own free will for the purposes therein set forth.

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

(SEAL)

02-11-2000

FORM PTO-1595  
(Rev. 6-93)U.S. DEPARTMENT OF COMMERCE  
Patent and Trademark Office101265673  
RECORDATION FORM  
PATENTS ONLY

ATTORNEY DOCKET NO: 284012-00006

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

<p>1. Name of conveying party(ies):</p> <p><b>MATTSON, STEPHEN DOUGLAS</b></p> <p>Additional name(s) of conveying party(ies) attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>2. Name and address of receiving party(ies):</p> <p>Name: <b>USA DIGITAL RADIO, INC.</b></p> <p>Internal Address:</p> <p>Street Address: <b>8865 STANFORD BOULEVARD</b></p> <p>City: <b>COLUMBIA</b> State: <b>MARYLAND</b> Zip: <b>21045</b></p> <p>Additional name(s) &amp; address(es) attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>3. Nature of conveyance:</p> <p><input checked="" type="checkbox"/> Assignment <input type="checkbox"/> Merger</p> <p><input type="checkbox"/> Security Agreement <input type="checkbox"/> Change of Name</p> <p><input type="checkbox"/> Other _____</p> <p>Execution Date: <b>September 15, 1999</b></p>	
<p>4. Application number(s) or patent number(s):</p> <p>If this document is being filed together with a new application, the execution date of the application is:</p> <p>A. Patent Application No. <b>09/382,716</b> B. Patent No.(s)</p> <p>Additional numbers attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	
<p>5. Name and address of party to whom correspondence concerning document should be mailed:</p> <p>Name: <b>ROBERT P. LENART</b></p> <p>Internal address: <b>ECKERT SEAMANS CHERIN &amp; MELLOTT, LLC</b></p> <p>Street Address: <b>600 GRANT STREET, 44th FLOOR</b></p> <p>City: <b>PITTSBURGH</b> State: <b>PA</b> Zip: <b>15219</b></p>	<p>6. Total number of applications and patents involved: ]</p> <p>7. Total fee (37 CFR 3.41) ..... \$ <b>40.00</b> <sup>61</sup></p> <p><input type="checkbox"/> Enclosed</p> <p><input checked="" type="checkbox"/> Authorized to be charged to deposit account</p> <p>8. Deposit account number: <b>02-2556</b></p> <p>(Attach duplicate copy of this page if paying by deposit account)</p>
<p>DO NOT USE THIS SPACE</p>	
<p>9. Statement and signature.</p> <p><i>To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.</i></p> <p><u>Robert P. Lenart</u> <u>Robert P. Lenart</u> <u>January 18, 2000</u></p> <p>Name of Person Signing Signature Date</p> <p>Registration No. 30,654</p> <p>Total number of pages including cover sheet, attachments, and documents: <b>4</b></p> <p>Mail documents to be recorded with required cover sheet information to: Commissioner of Patents and Trademarks, Box Assignments Washington, DC 20231</p>	

10431284.1

PATENT  
REEL: 010536 FRAME: 0185

10-12-1999

FORM PTO-1595  
(Rev. 6-93)U.S. DEPARTMENT OF COMMERCE  
Patent and Trademark Office

ATTORNEY DOCKET NO: 284012-00006

101166543

SET

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

## 1. Name of conveying party(ies):

KROEGER, BRIAN WILLIAM  
MATTSON, STEPHEN DOUGLAS

10-1-99

Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ No

## 2. Name and address of receiving party(ies):

Name: USA DIGITAL RADIO, INC.

Internal Address:

Street Address: 8865 Stanford Blvd.

City: Columbia State: MD Zip: 21045

Additional name(s) & address(es) attached? ☐ Yes ☒ No

## 3. Nature of conveyance:

- ☒ Assignment ☐ Merger  
☐ Security Agreement ☐ Change of Name  
☐ Other \_\_\_\_\_

Execution Date: September 15, 1999

## 4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No.(s):

B. Patent No.(s)

Additional numbers attached? ☐ Yes ☒ No

## 5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Robert P. Lenart  
 Internal address: Eckert Seamans Cherin & Mellott  
 Street Address: 600 Grant Street  
 44th Floor  
 City: Pittsburgh State: PA Zip: 15219

## 6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41) ..... \$ 40.00

☐ Enclosed☒ Authorized to be charged to deposit account

## 8. Deposit account number:

02-2556

(Attach duplicate copy of this page if paying by deposit account)

10/06/1999 DMEUYEN 00000153 022556 KROEGER BRIAN  
 01 FC:581 40.00 CH

DO NOT USE THIS SPACE

## 9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

Robert P. Lenart  
 Name of Person Signing  
 Registration No. 30,654

Robert P. Lenart  
 Signature

9-25-99  
 Date

Total number of pages including cover sheet, attachments, and documents:

Mail documents to be recorded with required cover sheet information to:  
 Commissioner of Patents and Trademarks, Box Assignments  
 Washington, DC 20231

PATENT  
 REEL: 010536 FRAME: 0186

**ASSIGNMENT**

WHEREAS, I **BRIAN WILLIAM KROEGER** and **STEPHEN DOUGLAS MATTSON**, of 12813 Amberwoods Way, Sykesville, in the County of **Howard**, State of **Maryland** 21784 and 179 Cold Stream Trail, Felton, in the County of **YORK**, State of **Pennsylvania** 17322; respectively, have invented certain improvements in: **METHOD AND APPARATUS FOR TRANSMISSION AND RECEPTION OF COMPRESSED AUDIO FRAMES WITH PRIORITIZED MESSAGES FOR DIGITAL AUDIO BROADCASTING**, for which I am about to make application for Letters Patent of the United States; and

WHEREAS, **USA DIGITAL RADIO, INC.**, a corporation organized and existing under the laws of the State of Ohio, having its principal place of business at 8865 Stanford Boulevard, Columbia, Maryland 21045, is desirous of acquiring an interest therein;

NOW, THEREFORE, for and in consideration of continued employment and/or other undertakings and/or other good and valuable consideration, receipt of which is hereby acknowledged, we, **BRIAN WILLIAM KROEGER** and **STEPHEN DOUGLAS MATTSON**, by these presents do sell, assign, and transfer unto said **USA DIGITAL RADIO, INC.**, its successors and assigns, the full and exclusive right in the United States of America and all foreign countries to the said invention as described in the specification executed by us on the \_\_\_\_\_ day of \_\_\_\_\_ 1999; and the **15<sup>th</sup>** day of **September**, 1999; respectively, said invention, all applications for Letters Patent and all Letters Patent therefor, to be held and enjoyed by the said **USA DIGITAL RADIO, INC.**, for its own use and behoof and for its legal representatives, to the full end of the term for which said Letters Patent are granted, as fully and entirely as the same would have been held by us had this Assignment and sale not been made; and I hereby covenant and agree to execute all instruments or documents required or requested for the making and prosecution of applications for

Stephen Mattson  
STEPHEN DOUGLAS MATTSON

MARYLAND  
STATE OF PENNSYLVANIA

COUNTY OF HOWARD

SS: 267-29-9481

On this 15th day of September, 1999, before me personally appeared **STEPHEN DOUGLAS MATTSON** to me personally known as the individual who executed the foregoing instrument and who acknowledged to me that he executed the same of his own free will for the purposes therein set forth.

Gail M. Halliday  
Notary Public

My Commission Expires: 3/17/2001

(SEAL)



Letters Patent of the United States of America and all foreign countries or, for litigation regarding, or for the purpose of protecting title to the said invention or Letters Patent therefor for the benefit of our assignee without further or other compensation than that above set forth; and I hereby request the Commissioner of Patents and Trademarks to issue said Letters Patent to **USA DIGITAL RADIO, INC.**, as assignee thereof.

\_\_\_\_\_  
**BRIAN WILLIAM KROEGER**

STATE OF MARYLAND  
 )  
 ) SS:  
 )  
 COUNTY OF HOWARD

On this \_\_\_\_ day of \_\_\_\_\_, 19\_\_, before me personally appeared **BRIAN WILLIAM KROEGER** to me personally known as the individual who executed the foregoing instrument and who acknowledged to me that he executed the same of his own free will for the purposes therein set forth.

\_\_\_\_\_  
 Notary Public

My Commission Expires: \_\_\_\_\_

(SEAL)

FORM PTO-1619A  
Expires 08/30/99  
OMB 0651-0027

04-11-2001



101659702

U.S. Department of Commerce  
Patent and Trademark Office  
**PATENT**

3-28-01

**RECORDATION FORM COVER SHEET  
PATENTS ONLY**

TO: The Commissioner of Patents and Trademarks: Please record the attached original document(s) or copy(ies).

**Submission Type**

- ☒ New  
☐ Resubmission (Non-Recordation)  
Document ID#   
☐ Correction of PTO Error  
Reel #  Frame #   
☐ Corrective Document  
Reel #  Frame #

**Conveyance Type**

- ☐ Assignment ☐ Security Agreement  
☐ License ☒ Change of Name  
☐ Merger ☐ Other

**U.S. Government**  
(For Use ONLY by U.S. Government Agencies)

- ☐ Departmental File ☐ Secret File

**Conveying Party(ies)**

☐ Mark if additional names of conveying parties attached

Name (line 1) LUCENT DIGITAL RADIO INC.

Execution Date  
Month Day Year  
08/21/2000

Name (line 2)

**Second Party**

Name (line 1) USA DIGITAL RADIO, INC.

Execution Date  
Month Day Year  
08/21/2000

Name (line 2)

**Receiving Party**

☐ Mark if additional names of receiving parties attached

Name (line 1) IBIQUITY DIGITAL CORPORATION

Name (line 2)

Address (line 1) 8865 STANFORD BOULEVARD

Address (line 2) SUITE 202

Address (line 3) COLUMBIA

MARYLAND/US

21045

City

State/Country

Zip Code

☐ If document to be recorded is an assignment and the receiving party is not domiciled in the United States, an appointment of a domestic representative is attached. (Designation must be a separate document from Assignment.)

**Domestic Representative Name and Address**

Enter for the first Receiving Party only.

Name

Address (line 1)

Address (line 2)

Address (line 3)

Address (line 4)

2240E

Refund Ref:  
04/10/2001 GTON11 0000103820

FOR OFFICE USE ONLY

CHECK Refund Total: \$200.00

Public burden reporting for this collection of information is estimated to average approximately 30 minutes per Cover Sheet to be recorded, including time for reviewing the document and gathering the data needed to complete the Cover Sheet. Send comments regarding this burden estimate to the U.S. Patent and Trademark Office, Chief Information Officer, Washington, D.C. 20231 and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Paperwork Reduction Project (0651-0027), Washington, D.C. 20503. See OMB Information Collection Budget Package 0651-0027, Patent and Trademark Assignment Practice. DO NOT SEND REQUESTS TO RECORD ASSIGNMENT DOCUMENTS TO THIS ADDRESS.

Mail documents to be recorded with required cover sheet(s) Information to:  
Commissioner of Patents and Trademarks, Box Assignments, Washington, D.C. 20231

04/10/2001 GTON11 00000053 09169738  
0. FC:561

2240.00 GP

**PATENT**  
**REEL: 011658 FRAME: 0769**

**Correspondent Name and Address**

Area Code and Telephone Number

412.566.1252

Name **ROBERT P. LENART, ESQ.**

Address (line 1) **ECKERT SEAMANS CHERIN & MELLOTT, LLC**

Address (line 2) **600 GRANT STREET, 44TH FLOOR**

Address (line 3) **PITTSBURGH, PA 15219**

Address (line 4)

**Pages**

Enter the total number of pages of the attached conveyance document  
including any attachments.

#

10

**Application Number(s) or Patent Number(s)**



Mark if additional numbers attached

Enter either the Patent Application Number or the Patent Number (DO NOT ENTER BOTH numbers for the same property).

**Patent Application Number(s)**

09/169,738

09/595,369

09/049,210

09/438,822

09/252,959

09/261,468

09/438,148

09/153,636

09/049,217

**Patent Number(s)**

6,128,334

5,859,876

5,703,954

5,898,732

5,559,830

5,588,022

5,606,576

5,809,065

5,404,375

If this document is being filed together with a new Patent Application, enter the date the patent application was  
signed by the first named executing inventor.

Month Day Year

**Patent Cooperation Treaty (PCT)**

Enter PCT application number

only if a U.S. Application Number  
has not been assigned.

PCT

PCT

PCT

PCT

PCT

PCT

**Number of Properties**

Enter the total number of properties involved.

#

**Fee Amount**

Fee Amount for Properties Listed (37 CFR 3.41): \$

Method of Payment:

Deposit Account

(Enter for payment by deposit account or if additional fees can be charged to the account.)

Enclosed ☐

Deposit Account ☐

Deposit Account Number:

#

Authorization to charge additional fees:

Yes ☐

No ☐

**Statement and Signature**

To the best of my knowledge and belief, the foregoing information is true and correct and any  
attached copy is a true copy of the original document. Charges to deposit account are authorized, as  
indicated herein.

Bonnie Lanzel

Name of Person Signing

Signature

March 26, 2001

Date

FORM PTO-1619C  
Expires 06/30/99  
OMB 0651-0027

RECORDATION FORM COVER SHEET  
CONTINUATION  
PATENTS ONLY

U.S. Department of Commerce  
Patent and Trademark Office  
PATENT

Conveying Party(ies)

☐ Mark if additional names of conveying parties attached

Enter additional Conveying Parties

Name (line 1)	<input type="text"/>	Execution Date Month Day Year	<input type="text"/>
Name (line 2)	<input type="text"/>	Execution Date Month Day Year	<input type="text"/>
Name (line 1)	<input type="text"/>	Execution Date Month Day Year	<input type="text"/>
Name (line 2)	<input type="text"/>	Execution Date Month Day Year	<input type="text"/>
Name (line 1)	<input type="text"/>	Execution Date Month Day Year	<input type="text"/>
Name (line 2)	<input type="text"/>		

Receiving Party(ies)

☐ Mark if additional names of receiving parties attached

Enter additional Receiving Party(ies)

Name (line 1)	<input type="text"/>	<input type="checkbox"/> If document to be recorded is an assignment and the receiving party is not domiciled in the United States, an appointment of a domestic representative is attached. (Designation must be a separate document from Assignment.)			
Name (line 2)	<input type="text"/>				
Address (line 1)	<input type="text"/>				
Address (line 2)	<input type="text"/>				
Address (line 3)	<input type="text"/>	City	State/Country	Zip Code	<input type="checkbox"/> If document to be recorded is an assignment and the receiving party is not domiciled in the United States, an appointment of a domestic representative is attached. (Designation must be a separate document from Assignment.)
Name (line 1)	<input type="text"/>				
Name (line 2)	<input type="text"/>				
Address (line 1)	<input type="text"/>				
Address (line 2)	<input type="text"/>				
Address (line 3)	<input type="text"/>	City	State/Country	Zip Code	

Application Number(s) or Patent Number(s)

☒ Mark if additional numbers attached

Enter either the Patent Application Number or the Patent Number (DO NOT ENTER BOTH numbers for the same property).

Patent Application Number(s)

Patent Number(s)

09/153,637	09/208,107	<input type="text"/>	5,517,529	5,579,345	5,878,089
09/207,894	09/192,555	<input type="text"/>	5,523,726	5,684,835	5,930,687
09/339,636	09/382,716	<input type="text"/>	5,517,535	5,646,947	5,956,373
09/339,362	<input type="text"/>	<input type="text"/>	5,768,323	5,566,214	5,315,583
09/339,745	<input type="text"/>	<input type="text"/>	5,598,441	5,828,705	5,278,826

PATENT  
REEL: 011658 FRAME: 0771

RECORDATION FORM COVER SHEET  
CONTINUATION  
PATENTS ONLY

U.S. Department of Commerce  
Patent and Trademark Office  
**PATENT**

**Conveying Party(ies)**

☐ Mark if additional names of conveying parties attached

Enter additional Conveying Parties

Name (line 1)	<input type="text"/>	Execution Date Month Day Year	<input type="text"/>
Name (line 2)	<input type="text"/>		
Name (line 1)	<input type="text"/>	Execution Date Month Day Year	<input type="text"/>
Name (line 2)	<input type="text"/>		
Name (line 1)	<input type="text"/>	Execution Date Month Day Year	<input type="text"/>
Name (line 2)	<input type="text"/>		

**Receiving Party(ies)**

☐ Mark if additional names of receiving parties attached

Enter additional Receiving Party(ies)

Name (line 1)	<input type="text"/>	<input type="checkbox"/> If document to be recorded is an assignment and the receiving party is not domiciled in the United States, an appointment of a domestic representative is attached. (Designation must be a separate document from Assignment.)		
Name (line 2)	<input type="text"/>			
Address (line 1)	<input type="text"/>			
Address (line 2)	<input type="text"/>			
Address (line 3)	<input type="text"/>	<input type="text"/>	<input type="text"/>	
	City	State/Country	Zip Code	
Name (line 1)	<input type="text"/>	<input type="checkbox"/> If document to be recorded is an assignment and the receiving party is not domiciled in the United States, an appointment of a domestic representative is attached. (Designation must be a separate document from Assignment.)		
Name (line 2)	<input type="text"/>			
Address (line 1)	<input type="text"/>			
Address (line 2)	<input type="text"/>			
Address (line 3)	<input type="text"/>	<input type="text"/>	<input type="text"/>	
	City	State/Country	Zip Code	

**Application Number(s) or Patent Number(s)**

☐ Mark if additional numbers attached

Enter either the Patent Application Number or the Patent Number (DO NOT ENTER BOTH numbers for the same property).

**Patent Application Number(s)**

**Patent Number(s)**

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="5,278,844"/>	<input type="text" value="5,757,854"/>	<input type="text" value="5,949,813"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="5,764,706"/>	<input type="text" value="5,956,624"/>	<input type="text" value="6,128,350"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="5,633,896"/>	<input type="text" value="5,745,525"/>	<input type="text" value="6,178,317"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="5,465,396"/>	<input type="text" value="5,903,598"/>	<input type="text" value="6,108,810"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="5,850,415"/>	<input type="text" value="6,014,407"/>	<input type="text" value="6,148,007"/>

*State of Delaware*  
*Office of the Secretary of State*

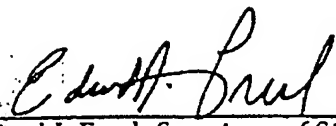
---

PAGE 1

I, EDWARD J. FREEL, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF MERGER, WHICH MERGES:

"LUCENT DIGITAL RADIO, INC.", A DELAWARE CORPORATION,  
WITH AND INTO "USA DIGITAL RADIO, INC." UNDER THE NAME OF  
"IBIQUITY DIGITAL CORPORATION", A CORPORATION ORGANIZED AND  
EXISTING UNDER THE LAWS OF THE STATE OF DELAWARE, AS RECEIVED  
AND FILED IN THIS OFFICE THE TWENTY-FIRST DAY OF AUGUST, A.D.  
2000, AT 3 O'CLOCK P.M.



  
Edward J. Freel, Secretary of State

2960685 8100M

001464727

AUTHENTICATION: 0675093

DATE: 09-14-00

PATENT

REEL: 011658 FRAME: 0773

**CERTIFICATE OF MERGER  
OF  
LUCENT DIGITAL RADIO, INC.  
INTO  
USA DIGITAL RADIO, INC.**

The undersigned corporation, USA Digital Radio, Inc., organized and existing under and by virtue of the General Corporation Law of the State of Delaware, by its duly authorized officer, DOES HEREBY CERTIFY:

1. The name and state of incorporation of each of the constituent corporations of the merger (the "Merger") is as follows:

<u>Name</u>	<u>State of Incorporation</u>
Lucent Digital Radio, Inc.	Delaware
USA Digital Radio, Inc.	Delaware

2. An Agreement and Plan of Merger, dated as of July 12, 2000, by and between Lucent Digital Radio, Inc. and USA Digital Radio, Inc. (the "Merger Agreement") has been approved, adopted, certified, executed and acknowledged by each of the constituent corporations in accordance with Section 251 of the General Corporation Law of the State of Delaware.

3. The name of the surviving corporation following the merger (the "Surviving Corporation") is USA Digital Radio, Inc., a Delaware corporation.

4. The certificate of incorporation of the Surviving Corporation is hereby amended to replace Article First and Article Fifth as set forth below:

FIRST: The name of the corporation is iBiquity Digital Corporation.

FIFTH: The aggregate number of shares which the corporation shall have authority to issue is 50,000,000 shares of Common Stock, par value \$0.01 per share, and 15,000,000 shares of Preferred Stock, par value \$0.01 per share.

5. The executed Merger Agreement is on file at the principal place of business of the Surviving Corporation, located at 8865 Stanford Boulevard, Suite 202, Columbia, Maryland 21045.

6. A copy of the Merger Agreement will be furnished by the Surviving Corporation, on request and without cost, to any stockholder of any constituent corporation.

7. This Certificate of Merger shall be effective as of August 2, 2000.

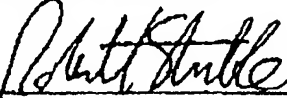
08/03/00 THU 15:21 FAX 4108721580

CT CORPORATION  
USA Digital Radio Inc

216 621 4859 P.05/20  
002

IN WITNESS WHEREOF, the undersigned has caused this Certificate of Merger to be  
executed as of the 21 day of August, 2000.

USA DIGITAL RADIO, INC.

By:   
Robert J. Struble  
President and Chief Executive Officer

CT-520736CL: 497581v1

PATENT  
REEL: 011658 FRAME: 0775



# IBIQUITY DIGITAL PENDING U.S. PATENT APPLICATIONS

Our Ref. Client Code Client Ref.	Inventor Title Country	Serial No. Patent No.	Filing Date Issue Date
TT 850 284012 015382-000850	Hunsinger et al. IN-BAND ON-CHANNEL DIGITAL BROADCASTING UNITED STATES	09/169,738	10/08/1998 **/**/****
USADR 99-004 284012 UDR	Kroeger et al. METHOD & APPARATUS FOR FORWARD ERROR CORRECTION CODING FOR AN AM IN-BAND ON-CHANNEL DIGITAL AUDIO BROADCASTING SYSTEM UNITED STATES	09/438,822	11/11/1999 **/**/****
USADR 99-007 284012	Kroeger et al. METHOD & APPARATUS FOR TRANSMISSION & RECEPTION OF FM IN-BAND ON-CHANNEL DIGITAL AUDIO BROADCASTING UNITED STATES	09/438,148	11/10/1999 **/**/****
USADR 99-009 284012	Kroeger et al. METHOD & APP. FOR REDUCTION OF INTERFER- ENCE IN FM IN-BAND ON-CHANNEL DIGITAL AUDIO BROADCASTING RECEIVERS UNITED STATES	09/595,369	06/15/2000 **/**/****
WWS 97-004 284012 UDR	Peyla et al. SYSTEM & METHOD FOR RECOVERING SYMBOL TIMING OFFSET & CARRIER FREQUENCY etc. UNITED STATES	09/252,959	02/18/1999 **/**/****
WWS 97-006 284012 UDR	Kroeger et al. ADAPTIVE WEIGHTING METHOD FOR ORTHOGONAL FREQUENCY DIV. MULTIPLEXED SYMBOLS etc. UNITED STATES	09/153,636	09/15/1998 **/**/****
WWS 97-008 284012 UDR	Kroeger et al. IN-BAND ON-CHANNEL DIGITAL AUDIO BROADCASTING METHOD & SYSTEM UNITED STATES	09/049,210	03/27/1998 **/**/****
WWS 97-009 284012 UDR	Kroeger AUDIO BLEND METHOD AND APPARATUS FOR AM & FM IN BAND ON CHANNEL DIGITAL AUDIO BROADCASTING UNITED STATES	09/261,468	02/24/1999 **/**/****

Our Ref. Client Code Client Ref.	Inventor Title Country	Serial No. Patent No.	Filing Date Issue Date
WWS 98-001 284012 UDR	METHOD & APPARATUS FOR AM DIGITAL BROADCASTING UNITED STATES	09/049,217	03/27/1998 **/**/****
WWS 98-003X 284012 UDR	METHOD & APPARATUS FOR AM COMPATIBLE DIGITAL BROADCASTING UNITED STATES	09/153,637	09/15/1998 **/**/****
WWS 98-009X 284012 UDR	Goldston et al. METHOD FOR EQUALIZATION OF COMPLEMENTARY CARRIERS IN AN AM SYSTEM UNITED STATES	09/207,894	10/02/1998 **/**/****
WWS 98-010X 284012 UDR	Goldston et al. METHOD & APP. FOR DETERMINING TRANSMISSION MODE & SYNCH. FOR DIGITAL AUDIO BROADCASTING SIGNAL UNITED STATES	09/339,363	06/24/1999 **/**/****
WWS 98-011X 284012 UDR	Goldston et al. METHOD FOR ESTIMATING SIGNAL-TO-NOISE RATIO OF DIGITAL CARRIERS IN AM COMPATIBLE DIGITAL AUDIO BROADCASTING SYSTEM UNITED STATES	09/339,362	06/24/1999 **/**/****
WWS 98-012X 284012 UDR	Goldston et al. METHOD & APPARATUS FOR TRAINING SEQUENCE ID. IN AM COMPATIBLE DIGITAL AUDIO BROADCASTING SYSTEM UNITED STATES	09/339,745	06/24/1999 **/**/****
WWS 98-013X 284012 UDR	Hartup et al. METHOD & APPARATUS FOR DEMODULATING & EQUALIZING AN AM COMPATIBLE DIGITAL AUDIO BROADCAST SIGNAL UNITED STATES	09/208,107	10/02/1998 **/**/****
WWS 98-014 284012 UDR	Kroeger et al. METHOD & APPARATUS FOR REDUCTION OF FM INTERFERENCE etc. UNITED STATES	09/192,555	11/03/1998 **/**/****
WWS 98-015 284012 UDR	Kroeger et al. METHOD & APP. FOR TRANSMISSION & RECEPTION OF COMPRESSED AUDIO FRAMES etc. UNITED STATES	09/382,716	08/24/1999 **/**/****

PATENT

REEL: 011658 FRAME: 0777

# IBIQUITY DIGITAL ISSUED U.S. PATENTS

Our Ref. Client Code Client Ref.	Inventor Title Country	Serial No. Patent No.	Filing Date Issue Date
57,659 284012 UDR	Dapper et al RECEIVER ADDRESSABLE AM COMPATIBLE DIGITAL BROADCAST SYSTEM UNITED STATES	08/803,714 6,128,334	02/21/1997 10/03/2000
57,660 284012 UDR	Dapper et al. DATA SERVICE CHANNEL PROVISION FOR AN AM COMPATIBLE BROADCAST SYSTEM UNITED STATES	08/602,553 5,898,732	02/20/1996 04/27/1999
57,661 284012 57,661	Dapper et al. ADAPTIVE MODE CONTROL SYSTEM FOR AM COMPATIBLE DIGITAL BROADCAST UNITED STATES	08/376,987 5,606,576	01/23/1995 02/25/1997
57,662C 284012 UDR	Dapper et al. METHOD & APPARATUS FOR IMPROVING AM COMPATIBLE BROADCAST ANALOG FIDELITY UNITED STATES	08/671,252 5,859,876	06/27/1996 01/12/1999
57,663 284012 UDR	Dapper et al. EQUALIZATION SYSTEM FOR AM COMPATIBLE DIGITAL RECEIVER UNITED STATES	08/376,986 5,559,830	01/23/1995 09/24/1996
57,664 284012 UDR	Dapper et al. METHOD & APPARATUS FOR IMPROVING QUALITY OF AM COMPATIBLE DIGITAL BROADCAST etc. UNITED STATES	08/603,768 5,809,065	02/20/1996 09/15/1998
57,665 284012 UDR	Dapper et al. METHOD AND APPARATUS FOR IMPROVING THE QUALITY OF AM COMPATIBLE DIGITAL BROADCAST SYSTEM SIGNALS IN THE PRESENCE OF DISTORTION UNITED STATES	08/604,199 5,703,954	02/20/1996 12/30/1997
57,669 284012 UDR	Dapper et al. METHOD AND APPARATUS FOR AM COMPATIBLE DIGITAL BROADCASTING UNITED STATES	08/206,368 5,588,022	03/07/1994 12/24/1996

Our Ref. Client Code Client Ref.	Inventor Title Country	Serial No. Patent No.	Filing Date Issue Date
57,734 284012	Kroeger et al. PROCESS & APPARATUS FOR SATELLITE DATA COMMUNICATION UNITED STATES	08/110,265 5,404,375	08/23/1993 04/04/1995
57,825 284012 UDR	Stehlik UHF/L-BAND MONOLITHIC DIRECT DIGITAL RECEIVER UNITED STATES	08/138,905 5,517,529	10/18/1993 05/14/1996
58,182 284012 UDR	Kroeger et al. DIGITAL QUADRIPHASE-SHIFT KEYING MODULATOR UNITED STATES	08/322,833 5,523,726	10/13/1994 06/04/1996
58,185 284012 UDR	Kroeger et al. NUMERICALLY CONTROLLED OSCILLATOR WITH COMPLEX EXPONENTIAL OUTPUTS etc. UNITED STATES	08/322,845 5,517,535	10/13/1994 05/14/1996
58,186 284012 UDR	Kroeger et al. SYMBOL SYNCHRONIZER USING MODIFIED EARLY-PUNCTUAL-LATE GATE UNITED STATES	08/322,854 5,768,323	10/13/1994 06/16/1998
58,188 284012 UDR	Kroeger et al. CARRIER ACQUISITION TECHNIQUE FOR MOBILE RADIO QPSK DEMODULATOR UNITED STATES	08/322,840 5,598,441	10/13/1994 01/28/1997
58,189 284012	Kroeger et al. CARRIER TRACKING LOOP FOR QPSK DEMODULATOR UNITED STATES	08/322,847 5,579,345	10/13/1994 11/26/1996
58,190 284012	Kroeger et al. LOCALLY COHERENT QPSK DETECTION WITH DECODING etc. UNITED STATES	08/322,846 5,684,835	11/13/1994 11/04/1997
58,529 284012	Cooper et al. MOBILE TELEPHONE SINGLE CHANNEL SUPERFRAME LOCK etc. UNITED STATES	08/411,048 5,646,947	03/27/1995 07/08/1997

Our Ref. Client Code Client Ref.	Inventor Title Country	Serial No. Patent No.	Filing Date Issue Date
58,530 284012	Kroeger et al. AUTO. NOISE NORMALIZATION & REACQUISITION CONTROL etc. UNITED STATES	08/491,667 5,566,214	06/19/1995 10/15/1996
58,559 284012 UDR	Kroeger et al. CARRIER TRACKING TECHNIQUE & APPARATUS W/AUTO. FLYWHEEL etc. UNITED STATES	08/593,154 5,828,705	02/01/1996 10/27/1998
58,636 284012 UDR	Dapper COHERENT SIGNAL DETECTOR FOR AM- COMPATIBLE DIGITAL RECOVERY UNITED STATES	08/803,699 5,878,089	02/21/1997 03/02/1999
58,643 284012 UDR	Dapper APPARATUS & METHOD FOR GENERATING AM- COMPATIBLE DIGITAL WAVEFORM UNITED STATES	08/724,606 5,930,687	09/30/1996 07/27/1999
58,917 284012 UDR	Goldston et al. AM COMPATIBLE DIGITAL AUDIO BROADCASTING SIGNAL etc. UNITED STATES	08/749,098 5,956,373	11/14/1996 09/21/1999
TT 100 284012 015382-000100	Murphy et al. METHOD & APPARATUS FOR DIGITAL AUDIO BROADCASTING & RECEPTION UNITED STATES	07/684,529 5,315,583	01/11/1991 05/24/1994
TT 200 284012 015382-000200	Murphy et al. METHOD & APPARATUS FOR DIGITAL AUDIO BROADCASTING & RECEPTION UNITED STATES	07/683,945 5,278,826	04/11/1991 01/11/1994
TT 300 284012 015382-000300	Murphy et al. METHOD & APPARATUS FOR DIGITAL AUDIO BROADCASTING & RECEPTION UNITED STATES	07/683,918 5,278,844	04/11/1991 01/11/1994
TT 610 284012 015382-000610	Carlin et al. AM COMPATIBLE DIGITAL WAVEFORM FRAME TIMING RECOVERY etc. UNITED STATES	08/636,044 5,764,706	04/22/1996 06/09/1998

Our Ref. Client Code Client Ref.	Inventor Title Country	Serial No. Patent No.	Filing Date Issue Date
TT 710 284012 015382-000710	Carlin et al. AM COMPATIBLE DIGITRL WAVEFORM DEMODULA TION USING DUAL FFT UNITED STATES	08/604,276 5,633,896	02/21/1996 05/27/1997
TT 800 284012 015382-000800	Hunsinger et al. IN-BAND ON-CHANNEL DIGITAL BROADCASTING UNITED STATES	08/003,189 5,465,396	01/12/1993 11/07/1995
TT 810 284012 015382-000810	Hunsinger et al. IN-BAND ON-CHANNEL DIGITAL BROADCASTING UNITED STATES	08/454,032 5,850,415	05/30/1995 12/15/1998
TT 840 284012 015382-000840	Hunsinger et al. IN-BAND ON-CHANNEL DIGITAL BROADCASTING UNITED STATES	08/453,318 5,757,854	05/30/1995 05/26/1998
TT 900 284012 015382-000900	Hunsinger et al. SIMULTANEOUSLY BROADCASTING & RECEIVING DIGITAL & ANALOG SIGNALS UNITED STATES	08/274,140 5,956,624	07/12/1994 09/21/1999
TT 910 284012 015382-000910	Hunsinger et al. SIMULTANEOUSLY BROADCASTING & RECEIVING DIGITAL & ANALOG SIGNALS UNITED STATES	08/485,599 5,745,525	06/07/1995 04/28/1998
TT 911 284012 015382-000911	SIMULTANEOUSLY BROADCASTING & RECEIVING DIGITAL & ANALOG SIGNALS UNITED STATES	08/914,355 5,903,598	08/19/1997 05/11/1999
TT 912 284012 015382-000912	Hunsinger et al. METHOD & SYSTEM FOR SIMULTANEOUSLY BROADCASTING AND RECEIVING DIGITAL & ANALOG SIGNALS UNITED STATES	08/914,456 6,014,407	08/19/1997 01/11/2000
TT 913 284012 015382-000913	Hunsinger et al. SIMULTANEOUSLY BROADCASTING & RECEIVING DIGITAL & ANALOG SIGNALS UNITED STATES	08/914,356 5,949,813	08/19/1997 09/07/1999

Our Ref. Client Code Client Ref.	Inventor Title Country	Serial No. Patent No.	Filing Date Issue Date
USADR 99-001 284012 UDR	Shastri et al. METHOD & APP. FOR REDUCING PEAK TO AVERAGE POWER RATIO IN DIGITAL BROADCASTING SYSTEMS UNITED STATES	09/379,780 6,128,350	08/24/1999 10/03/2000
WWS 96-011 284012 MR2403-2	Kroeger et al. SYSTEM & METHOD FOR MITIGATING INTERMITTENT INTERRUPTIONS etc. UNITED STATES	08/947,902 6,178,317	10/09/1997 01/23/2001
WWS 97-001 284012 UDR	Kroeger et al. DIGITAL AUDIO BROADCASTING METHOD USING PUNCTURABLE CONVOLUTIONAL CODE UNITED STATES	09/049,140 6,108,810	03/27/1998 08/22/2000
WWS 97-005 284012	Kroeger METHOD FOR DATA TRANSMISSION IN DIGITAL AUDIO BROADCASTING SYSTEM UNITED STATES	09/049,216 6,148,007	03/27/1998 11/14/2000

NUMBER OF PATENTS LISTED ON THIS REPORT: 39